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WHO CHRONICLE

VOL. 13, No. 5 - MAY 1959

Occupational health in South-East Asia

Classification of cardiovascular diseases

Yaws : a disease in regression

Encephalitis in California

Health statistics

Plague : epidemiology and control

Public health nursing

WORLD HEALTH ORGANIZATION
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The World Health Organization (WHO) is one of the specialized agencies of the United Nations. Through this organization, which came into being in 1948, the public health and medical professions of more than 80 countries exchange their knowledge and experience, and collaborate in an effort to achieve the highest possible level of health throughout the world. WHO is not concerned with problems which individual countries or territories can solve with their own resources. It deals, rather, with problems which can only be satisfactorily solved through the co-operation of all, or certain groups of, countries—the eradication of diseases such as malaria, the control of cholera, plague, yellow fever, smallpox and rickettsiosis. Progress towards better health throughout the world also demands international co-operation in many other activities : for example, setting up standards for biological substances, for insecticides and insecticide spraying equipment ; compiling an international pharmacopoeia ; drawing up international sanitary regulations ; revising the international lists of diseases and causes of death ; assembling and disseminating epidemiological information ; recommending non-proprietary names for drugs ; and promoting the exchange of scientific knowledge. In many parts of the world, there is need for improvement in maternal and child health, nutrition nursing, mental health, environmental sanitation, public health administration, professional education and training, and health education of the public. Thus a very large share of the Organization's resources is devoted to giving assistance and advice in these fields to countries and territories whose health services are in an early state of development and which are therefore weak points in the common front against disease.

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WORLD HEALTH ORGANIZATION

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OCCUPATIONAL HEALTH IN SOUTH-EAST ASIA

Industrialization is changing the living conditions of large numbers of people in the South-East Asia Region. The total population of the Region is approximately 500 million, of whom 22 million are already employed by industrial undertakings and more than 160 million are economically active. Representatives of six countries in the Region—Afghanistan, Burma, Ceylon, India, Indonesia and Thailand—took part in a Regional Conference on Industrial and Occupational Health, which was held at Calcutta, India, from 24 November to 5 December 1958, under the joint auspices of WHO and ILO. Of the 28 participants, 18 were medical officers and the others were government and industrial representatives. The Conference was also attended by representatives from WHO Headquarters, the WHO Regional Office for South-East Asia, and observers from the Indian Society for the Study of Industrial Medicine. The article that follows is based on the recently issued report of the Conference.[1]

The countries of South-East Asia have many industrial health problems in common. In national health programmes, the main emphasis has hitherto been on the most urgent needs such as the control of communicable diseases, environmental sanitation, and maternal and child health. The results of this work have been encouraging and of great importance to the industrial population.

Much has already been done to promote and safeguard the health of workers in the Region, but occupational health work is nevertheless still in its early stages and its value has not always been appreciated by government authorities and employers. In addition, a lack of personnel and other resources has made it difficult to develop this branch of health work adequately. Occupational health legislation is fairly well developed, but its application and enforcement have often proved difficult or even impossible because of insufficient funds (especially in smaller undertakings), lack of supervision owing to the shortage of trained personnel, and failure of employers to appreciate the problems involved.

Medical treatment facilities are often available for workers in factories, on railways, on plantations, in government offices, in irrigation and construction works, in mines, at harbours, etc. As a rule, however, full-scale industrial medical services exist in large undertakings only, and are conspicuously lacking in the small industrial undertakings which predominate in South-East Asia. In India, for example, only 851 undertakings out of a total of 24 456 employ more than 500 workers. The equivalent figures for Indonesia and Burma are 93 out of 9807 and 19 out of 2714, respectively.

The shortage of staff for occupational health services in most countries of the Region is scarcely surprising, since in some of them it is impossible to obtain enough medical personnel to carry out even the most urgent public health and hospital activities. In addition, physicians are usually more interested in private practice and clinical medicine than in social medicine; only 133 physicians in India, 4 in Ceylon and 10 in Indonesia are fully trained in industrial medicine. Although the subject is included in the undergraduate medical courses at certain universities in India and Afghanistan, post-graduate training in occupational health is available only at the All-India Institute of Hygiene and Public Health in Calcutta, India. The only occupational health institutes and laboratories in the Region are in India

[1] This report may be obtained from the WHO Regional Office for South-East Asia, Patiala House, New Delhi, India.

(Calcutta, New Delhi, Kanpur), Ceylon (Colombo) and Indonesia (Djakarta).

The administration and supervision of occupational health services are largely the concern of the labour authorities. There are at present only eight medical inspectors of factories employed in India, one in Indonesia, and one in Ceylon. There are only three industrial health specialists on the staff of a Department of Health in the Region.

Co-ordination between the departments and authorities concerned with occupational health is not always as well developed as it might be. Existing legislation in some countries leads to overlapping of activities between different government departments. The question of collaboration and co-ordination in occupational health matters, both within and outside places of employment, requires more attention.

Organization of occupational health services

The Regional Conference on Industrial and Occupational Health discussed at length the nature of an occupational health service as distinct from a medical service at the place of employment. There was a large measure of agreement on the functions of medical services at places of employment in South-East Asia, but there was considerable divergency of opinion as to how many of these functions could properly be included under the term " occupational health ". It was agreed that occupational health should be considered as including industrial health, and that—as recommended in the first report of the Joint WHO/ILO Committee on Occupational Health [2]—its general aims should be " the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention among workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological equipment and, to summarize: the adaptation of work to man and of each man to his job ".

It was concluded that such services are clearly the responsibility of the employer and that, within the place of employment, they should be organized and paid for by him; on the other hand, the provision of community health services covering workers and their families outside the place of employment is usually a government responsibility.

The Conference concluded that it would be unwise to lay down any rigid formula for the organization of occupational health services. Whatever pattern is adopted, the factors most likely to influence the organizational structure in any particular undertaking would be: (*a*) number of employees; (*b*) health hazards; (*c*) nature of industry; and (*d*) location. A small undertaking with major hazards might require a more elaborate service than a large undertaking with minor hazards.

It was agreed that any undertaking employing 1000 or more workers should be considered as a large one and have a full-time industrial physician; in a hazardous industry with a smaller number of employees, a full-time physician might also be necessary. In some cases, it might be possible for one full-time physician with adequate nursing and auxiliary staff to provide health services for 2000 or even 3000 employees.

For small industries with minor hazards, part-time industrial physicians would be adequate, particularly if suitable nursing or first aid arrangements are available, and it was suggested that smaller industries could co-operate in providing common part-time services for all their employees. Where this is not possible, owing to the situation or inadequate resources of the undertaking, the necessary facilities might be provided by the community health service. This is particularly desirable since the majority of workers in the Region are employed in small undertakings, often under poor hygienic conditions, unprotected by social insurance schemes and insufficiently supervised; it would be unfair to deny them completely the protection of an occupational health service. In undertakings cut off from community

[2] Unpublished working document WHO/Occ. Health/2

health services, the employer should assume responsibility not only for providing general occupational health facilities at the place of work, but also for general preventive and medical care both inside and outside the establishment. This should include care of workers' families.

Employers in agricultural undertakings have exactly the same obligations as employers in any other form of occupation, though obviously health services for agricultural workers cannot—and should not—be organized in the same way as those for industrial workers. The Conference did not feel competent, for lack of data, to lay down principles for health services for agricultural workers, but agreed that more attention would have to be given to their health in the future, particularly in view of the increasing use of mechanical equipment, and of insecticides, pesticides, fertilizers and other toxic materials, in agriculture.

The Conference agreed that the functions of occupational health services in South-East Asia should be primarily preventive, i.e., aimed at the control of physical, chemical, mental, physiological and other factors likely to affect the worker's health. The services should be prepared to deal with non-occupational health problems, according to the special needs and circumstances of the areas in which they operate. Thus they might assume responsibility for immunizing workers against typhoid, cholera, smallpox, tetanus and other diseases.

They should also be responsible for medical examinations of workers, the rehabilitation of persons incapacitated by industrial accidents or occupational disease, and the rehabilitation of handicapped workers in general. Special programmes might have to be developed in the Region for the rehabilitation of workers with chronic diseases such as tuberculosis and non-infectious leprosy.

The industrial physician should be in a position to advise the management of the undertaking on general problems relating to workers' health, such as nutrition, housing, the disposal of industrial wastes and the prevention of air pollution.

It was emphasized that a number of diseases not usually recognized as occupational might have a higher incidence among workers than among the general population. This is a field in which collaboration between occupational and community health services would be particularly useful. Mass examinations for tuberculosis, venereal disease, diabetes, malaria, eye diseases, helminthic diseases, and malnutrition are carried out extensively by community health services in the Region, and the Conference considered that the facilities available for these examinations should be put at the disposal of occupational health services.

Occupational health institutes

The role of occupational health institutes was discussed at length. While some of the participants felt that such institutes should be independent of government control, it was recognized that at present only governments are in a position to finance them. A useful way of administering an occupational health institute might be through an autonomous governing body consisting of representatives of employers, employees, and the government, and preferably including also representatives of the medical profession. This body could be assisted by a group of advisers with appropriate technical qualifications and experience; WHO and ILO could help in this connexion.

The tasks of an occupational health institute should be (*a*) service and research; (*b*) training; and (*c*) the provision of technical information. For the last of these tasks in particular, assistance from international organizations such as ILO and WHO would be desirable.

The institute should preferably be affiliated to a university, a medical school, or an institute of public health. Proximity to a medical school, particularly one concerned with post-graduate education, would be an advantage because of the availability of advice and assistance from expert clinicians. It would be most useful if occupational health institutes in various South-East Asian countries would maintain close contact with each other and evolve programmes of research on common problems.

Collaboration and co-ordination

It was agreed that, to get the best results from their work, occupational health services should collaborate as closely as possible with the other departments in the undertakings to which they are attached. In larger undertakings consisting of a number of separate departments, the status of the occupational health service should be comparable to that of any other department, and the industrial physician's status should be equal to that of other departmental heads. Even in a relatively small undertaking which is not clearly divided into a number of departments, the occupational health service should be regarded as a separate section, with the industrial physician in charge directly responsible to the management.

External agencies with which collaboration is desirable include: community health services, social security agencies, labour inspectorates, labour institutes, occupational health institutes, medical societies, and employers' and workers' organizations. Collaboration with these agencies on the local level should preferably be entrusted to the industrial physician. It is vital that there should be co-operation also with international agencies such as WHO and ILO.

Education and training

Before suitable training facilities can be devised, the needs must be ascertained. This could be done by committees consisting of representatives of the governments, employers' and workers' organizations, industrial physicians, the nursing profession, and faculties of medicine and engineering. Existing training facilities should be utilized as fully as possible, and perhaps—with the assistance of international and other agencies—organized on a regional basis. The support of the employers should be sought in selecting suitable persons for training, and preference should be given to those already engaged in occupational health work.

Some instruction in occupational health should be included in the general medical curriculum, perhaps in the public health and social medicine courses. It might also be advisable for the physiology course to include instruction on such aspects of the subject as work stress and fatigue, and during the period of clinical training students should have the opportunity of attending occupational health clinics. Special intensive field training courses might be arranged for physicians already working in occupational health, while a complete university course culminating in a degree or a diploma should be established for those intending to specialize in the subject. Opportunities for physicians to study occupational health work in other countries would also be desirable.

Special training for nurses intending to work in industry was recommended, but the Conference recognized that, in view of the present shortage of qualified nurses in the Region, it might be necessary to have recourse to " auxiliary personnel " chosen from persons having the necessary intelligence and education and already engaged in occupational health work. The training of auxiliary personnel would be primarily the responsibility of the industrial health physician, but it would also be desirable to provide a separate intensive course, lasting about three months, in a suitable institute. In planning the course, it should be remembered that, owing to the shortage of physicians, auxiliary personnel might have to work without much supervision.

The Conference considered that it was also important to provide information on occupational health to engineers, students of various trades, factory inspectors, employers, supervisors, workers and social welfare officers. Finally, it was agreed that health education should be one of the main elements in the development of an occupational health programme. This should be a responsibility of all members of the health team and the active participation of both management and workers should be enlisted.

CLASSIFICATION OF CARDIOVASCULAR DISEASES

Cardiovascular disease is of growing importance in medicine today, particularly in those countries where the proportion of individuals in the higher age-groups is increasing. The first, and by no means least, of the difficulties facing the medical practitioner who has to deal with it is to classify its various manifestations in a rational and intelligible way. Their classification in the seventh revision of the International Statistical Classification of Diseases, Injuries and Causes of Death [1] *was generally admitted not to be entirely satisfactory, but the conference which prepared the revision decided to postpone substantial changes until the eighth revision in 1965. The article that follows deals with ways in which the existing classification might be improved.*

Cardiovascular disease has been the focus of increasing attention, particularly in the more developed countries of Europe and America, in proportion as its incidence has gone up and that of other diseases has gone down. In the International Statistical Classification of Diseases, Injuries and Causes of Death, most cardiovascular diseases are classified under diseases of the circulatory system, where they are sub-divided into rheumatic heart disease, arteriosclerotic and degenerative heart disease, and hypertension and hypertensive heart disease. But other cardiovascular diseases are classified as syphilitic cardiovascular affections, congenital malformations of the circulatory system, and psychogenic disorders of the circulatory system. Vascular lesions of the central nervous system, whether due to arteriosclerosis or to hypertension, are classified under diseases of the nervous system and sense organs.

The criticism levelled against this classification of cardiovascular diseases is that it is complicated and results in statistics that are difficult to interpret and not comparable. One reply to this criticism is that the present classification reflects the complexity of cardiovascular disease itself, which can be viewed —and classified—from a number of standpoints. In fact it provides an admirable illustration of a problem which arose at the Second International Statistical Congress in 1855 and has been debated ever since, i.e., should diseases be classified by etiology, by anatomical site, according to some other criterion, or according to a combination of criteria? If etiology were the sole point of interest in cardiovascular disease, deaths would be classified in most cases under hypertension, arteriosclerosis, or rheumatic fever. But the anatomical site (the heart, the brain, or the kidney) may be of equal or even greater interest, and the classification recognizes this by providing suitable categories: for example, hypertension accompanied by hypertrophy of the heart may be classified under " Other and unspecified hypertensive heart disease ", a title which caters for both etiology and site of involvement.

Not all categories in the cardiovascular section, however, are so accommodating; etiology is often sacrificed to anatomical site if this is of greater significance. For instance, cerebral haemorrhage due to arteriosclerosis is classified simply as cerebral haemorrhage, a category which ignores etiology. Moreover, if the coronary arteries are involved, hypertension with hypertrophy of the heart may not be classified as in the example given above, but under heart disease specified as involving coronary arteries, the etiology, i.e., the hypertension stated on the death certificate, being passed over.

There is, therefore, justification for the criticism that the present classification of cardiovascular diseases does not always

[1] **World Health Organization (1957)** *Manual of the International Statistical Classification of Diseases, Injuries and Causes of Death, 1955 revision*, Geneva

incorporate all the useful information that is contained in the death certificate. But the shortcomings in statistics of cardiovascular diseases can only partly be attributed to the classification. Other factors are equally important. Among them may be included the manner in which clinical observations are summarized and presented on the death certificate and elsewhere; the form of the present international medical certificate of cause of death, which may be unsuitable for the recording of complex disease states; difficulties in the medical terminology used to describe a particular morbid condition; and, finally, the quality and reliability of the diagnoses made by physicians.

Greater clarity in the clinical classification of cardiovascular diseases could not fail to benefit a statistical classification which takes into account current clinical opinion and is periodically revised to keep abreast of advances in medical knowledge. From this point of view, the situation would be improved if the criteria required for the diagnosis of cardiovascular disease were defined; if the relationship between the various manifestations of the disease were elucidated; if the aspects of primary interest from the clinical or preventive point of view were brought out; and if the degree of detail with which the manifestations of the disease should be differentiated were indicated.

How the International Statistical Classification would be affected can be shown by the example of malignant hypertension. This disease is classified as essential malignant hypertension, or, if the heart is involved, as essential malignant hypertensive heart disease. It is considered to be a condition of special interest, and provision is made in the Classification to preserve its identity as much as possible when it is combined with other manifestations of cardiovascular disease. For example, malignant hypertension with nephrosclerosis is classified under malignant hypertension and not under arteriolar nephrosclerosis.

If it is shown that malignant hypertension is not a separate clinical entity, but differs from benign hypertension only in degree, the question arises whether the preservation of the distinction between these conditions in the International Classification would still be warranted. It might still be regarded as desirable to maintain the concept of malignancy in order to indicate the seriousness of the condition and its grave prognosis. Even this concept, however, may lose significance, if, as is claimed, anti-hypertensive drugs can substantially improve malignant hypertension.

A different kind of problem is posed by the association of coronary disease with other diseases. Coronary disease takes precedence, not only over less precise diagnoses, such as myocardial degeneration or functional heart disease, but also over the whole group of hypertensive diseases. Consequently, the fact that coronary disease began with hypertension would not be apparent from single-cause tabulations. If this etiological aspect of coronary disease is of sufficient importance, the International Classification should provide for the incorporation of hypertension into the title covering coronary disease.

These are the kind of problems encountered in the classification of cardiovascular diseases. WHO keeps in close touch with developments in these diseases, because of their great importance to world health; and it seeks to clarify the present situation, because it is responsible for the International Classification, and because any improvement in the Classification leads to increased comparability and contributes to the understanding of the disease concerned. A WHO Expert Committee on Cardiovascular Diseases and Hypertension which met in October 1958 [2] was aware of the shortcomings of the section on cardiovascular disease in the Classification, but realized that its inadequacy reflected present-day disagreement about clinical concepts and terminology. The application of uniform diagnostic criteria would improve the quality and homogeneity of diagnosis, but even so the Classification would have to provide categories for the vague terms still often found on death certificates, particularly in the case of the aged.

[2] *Wld Hlth Org. techn. Rep. Ser.*, 1959, **168**. See also *Chronicle*, 1959, **13**, 189.

The Committee noted the study begun by the WHO Regional Office for Europe of existing practice in various European countries with regard to death certification in cases of cardiovascular disease. It agreed that a long period of postgraduate education of the medical profession is required before improved certification can lead to any substantial improvement in national statistics. Pending such improvement, comparative studies based on clinical and post-mortem records should be undertaken, to gauge how far certificates are correct and to assess the real incidence of morbidity conditions leading to cardiovascular disease and death. Until results of such studies are received, existing international tabulations of morbidity from cardiovascular diseases would improve in usefulness if accompanied by comments on their quality and on the methods used to correct and classify them.

A WHO Expert Committee on Health Statistics which met in September and October 1958 [3] also agreed that a series of basic clinical and statistical studies would be necessary before a revision of the cardiovascular section of the Classification could be undertaken. Investigations have already been planned or started in certain countries into such subjects as medical certification of cause of death, the basis of the diagnosis entered on certificates, and ways of improving classification.

The Committee recognized the need for early co-ordination of national and international efforts, before divergent ideas about the revision of the classification of cardiovascular diseases became firmly fixed. It recommended that a group of health statisticians and of specialists in cardiovascular diseases with an understanding of statistical classification should meet to consider such revision in the light of current medical concepts and statistical requirements.

WHO's task is to follow the methodological studies undertaken in various countries, to keep the countries informed of what is being done, and to collect, consolidate, and analyse results. A document is accordingly being distributed to all national committees on vital and health statistics and other interested agencies, setting out the present position and containing the request that WHO be informed of any national or local studies carried out or planned on the clinical and statistical classification of, and the coding and tabulation of the mortality and morbidity from, cardiovascular diseases.

[3] *Wld Hlth Org. techn. Rep. Ser.*, 1959, **164**. See page 221 of this number of the Chronicle.

Alcohol, tobacco and cardiovascular disease

" The evidence that alcohol is relevant to cardiovascular disease comes largely from vital statistics. Areas where consumption is high may have quite low reported mortality rates from ischaemic heart disease, whereas they seem to have an excessive death-rate from other cardiovascular and renal diseases. This is particularly evident in a number of countries, among persons whose occupations are associated with a high alcohol consumption, such as bartenders.

" Two independent large-scale studies on the role of tobacco in cancer of the lung state as an incidental finding that heavy smokers have higher death-rates from coronary thrombosis. Excessive smoking and drinking may both be expressions of emotional disturbances; but whatever the mechanism, the relationship of heavy smoking to cardiovascular disease very much merits further study."

. . . From the report of a Study Group on Atherosclerosis and Ischaemic Heart Disease, *Wld Hlth Org. techn. Rep. Ser.*, 1957, **117**

YAWS: A DISEASE IN REGRESSION

A communicable disease may spread throughout an area from one or more foci, and then gradually recede, even without effective treatment, until it is again confined to a few foci, or even disappears. Trachoma, for example, was brought into Europe by Napoleon's army on its return from Egypt, and ravaged the entire continent; but it has now practically disappeared from most European countries. Yaws has similarly almost disappeared from Ceylon, where in 1916-1920 there were 30 000 to 35 000 people with yaws lesions attending the outpatient departments of hospitals every year.

Yaws indeed is a good example of a disease in regression. In the earlier decades of this century its prevalence in those countries where it occurs was high, and patients in the early stage displayed many lesions. This is no longer so. In half of the 400 million people at risk in the world, this is due to the mass treatment of the population with long-acting procaine penicillin in oil with 2% aluminium monostearate (PAM). But in the other half the prevalence of the disease is now low, although no mass treatment has been given. There are few clinically active cases, and the number of seroreactors may be large or small, depending on how recent the decline in the transmission of the disease has been. When transmission has ceased, no cases of clinically active yaws occur, but seroreactors are found among adults, though not among children.

Another characteristic of the disease in its regressive phase is its reduced severity: not only are clinically active lesions few, but the papillomatous stage is distinguished by the sparsity of papillomata in even the most heavily affected patients, and those papillomata that do exist are usually dry, whereas previously they would in most cases have had an abundant infectious exudate.

Yaws may be found in regression in communities where treatment has been available for many years to those seeking it. But the regression appears to be more general than could be accounted for by such unsystematic treatment, and most campaigns before 1950—when the Government of Haiti launched one with WHO, UNICEF, and PASB assistance—were on too small a scale to have any lasting effect. In places where yaws was hyperendemic, the people were poor, ill-clothed, ill-fed, unwashed, with scarred dry skins covered with ulcers. This is still true of the foci of high prevalence which remain in certain isolated areas. Where yaws is regressing they are better clothed, better fed, more prosperous-looking, with clean, glossy skins. These areas of regression are associated with improved economic and social conditions, and often with proximity to main roads.

How can the regression of yaws be accelerated ? A survey of the population at risk must be carried out in order to assess the extent and clinical pattern of the disease. Treatment will then depend on the numbers affected. If they are few, or if the population is scattered, total mass treatment is probably the most economical form. If they are many, juvenile mass treatment should be used when the clinical prevalence is 5-10%, selective mass treatment when it is 2-5%. If it is under 2%, possibly all that is required is for PAM to be made available at rural dispensaries or elsewhere, and for some simple surveillance system to be established.

In juvenile mass treatment, adults with clinically active lesions are given 4 ml of PAM, and children under 15 years of age with clinically active lesions 2 ml, while all other children under 15 receive 1 ml. Children are protected because they are the most likely to have latent early infection, and are thus most liable to have infectious relapses or to be incubating the disease. In selective mass treatment all clinically active cases are treated, and half doses according to age are given to close contacts. Measures to improve the economic and social condi-

tions of the people will also help to reduce the incidence of yaws.

With the gradual regression of the disease, the significance of seroreactors changes: instead of indicating the extent of infection during the past 30-50 years, they indicate the increasing number of susceptible individuals. The attitude of the health authorities also changes: instead of seeking to render early cases non-infectious, they look for the sources of infection of the few early cases that may be expected to occur for several years after yaws has ceased to be a public health problem. The established rural health services must carry out this surveillance work, and in some countries may therefore have to be expanded. At what stage should such surveillance take the place of surveys ? It has been suggested that a suitable time would be when a survey of 80% of the population reveals less than 2% of clinically active, and less than 0.5% of infectious, cases.

The most likely sources of isolated infections are missed cases, delayed relapses in untreated early latent cases, and new cases introduced from outside. Active or latent early cases that have received the doses of PAM recommended by WHO[1] rarely relapse. Infection is possible from late lesions, but infectiousness is not high. Survival of the treponemes outside the human body has yet to be demonstrated. Introduction of new cases from an area where transmission is still active is a possibility, and has been shown to occur between northern and southern Togo. Prompt recognition and treatment is imperative for these cases, but improved living standards and the virtual disappearance of the conditions favouring transmission should ensure that the arrival of one or two infectious patients does not start an outbreak.

The paper—prepared by WHO[2]—on which this article is based concludes by stressing the danger of venereal syphilis spreading into the rural areas when yaws has disappeared and no longer affords protection against syphilis.

[1] *Bull. Wld Hlth Org.*, 1956, 15, 869
[2] Unpublished working document INT/VDT/116

International standards for drinking-water

" WHO has been concerned for some time with the standardization of methods for controlling the quality of drinking-water. In 1953 the Organization sent Member States a questionnaire concerning the methods officially used in their respective countries. A study group examined the replies and finally established the ' approved methods ' which are described in this volume, * sometimes in very great detail.

" ...WHO is to be highly congratulated on this remarkable work prepared by its specialists, who have very carefully codified the classic methods. It is extremely important to be able to compare the views of technicians from different countries, and one of the great merits of this volume is that it makes this possible. The French reader, for example, will be surprised at the amount of attention given to determination of the plankton content and by the absence of references to bacteriophage standards, an aspect of the subject with which French technicians are more familiar.

" Hygienists will be extremely interested in the first part of this work and technicians — whether chemists, physicists, bacteriologists or biologists — will read the second part with profit. It is to be hoped... that this publication will act as a stimulus to fresh research and lead to further progress in this field. "

La Presse Médicale, 1959, Vol. 67, p. 533

* World Health Organization (1958) *International standards for drinking-water*, Geneva. Price: £1, $4.00, or Sw. fr. 12.— (clothbound).

ENCEPHALITIS IN CALIFORNIA

WHO has co-ordinated and encouraged studies of encephalitis, on the ground that only by the pooling of international knowledge can its etiology and epidemiology be elucidated. A collection of articles on an outbreak of virus meningo-encephalitis in Europe in 1953 was published in the WHO Bulletin in 1955.[1] They describe a disease only recently recognized in central Europe, though it may well have been present for many years. The outbreak provided an opportunity for an international study of the disease, in which workers from Austria, the Netherlands, the United States, and Yugoslavia took part. In Slovenia an organism isolated from the blood of a patient diagnosed clinically as having encephalitis caused illness and death in white mice, and the antigen prepared from infected brains of mice fixed complement with sera from typical cases.

The disease showed seasonal periodicity in Austria, occurring in the summer months and disappearing in the winter, and a history of bites by ticks or mosquitos was recorded in most instances. The virus isolated was shown to be the same as, or closely related to, those of Russian spring-summer encephalitis, Czech encephalitis, and louping ill, a disease of sheep. An Advisory Group convened by the WHO Regional Office for Europe in April 1958 estimated that the incidence of the disease might exceed 20 per 100 000 in some years in the endemic areas of Europe.[2]

Encephalitis is also of much topical interest in the Americas, where in the recent past new varieties have been discovered. The Pan American Sanitary Bureau (PASB), which acts as the WHO Regional Office for the Americas, also encourages study of the disease, and it published a study of encephalitis in California in a recent number of its Boletín.[3]

[1] *Bull. Wld Hlth Org.*, 1955, **12**, 487-589
[2] *Chronicle*, 1958, **12**, 293
[3] *Bol. Ofic. sanit. panamer.*, 1959, **46**, 39

Of the various varieties of encephalitis, two caused by arthropod-borne viruses have been the subject of much investigation in California. These are St Louis or epidemic encephalitis and western equine encephalitis or encephalomyelitis, the latter having been identified in California as a separate clinical entity.

Acute encephalitis has been a notifiable disease in California since 1919. There was an epidemic in 1952, 805 cases being reported, of which 410 cases were confirmed as being of either St Louis or western equine encephalitis. Since then only in 1954 have more than 100 cases of arthropod-borne virus encephalitis been notified in any year, although in every year since 1952 there have been more than 350 suspected cases of encephalitis; there were less than 50 cases due to St Louis or western equine viruses in four out of the five years 1953-1957, and there were only 9 in 1955. Virus encephalitis is clearly therefore more a potential than an actual danger; there are few cases, but there is always the possibility of an epidemic.

The seasonal distribution of virus encephalitis follows a fairly uniform pattern from year to year. The first cases of western equine encephalitis occur in June, and are followed by cases of both western equine and St Louis encephalitis in July, August and September, the St Louis form predominating in September and occurring almost alone in October. After this there are no more virus cases till the following year. In the past five years this time-lag of one month by the St Louis form has not been so clear-cut as formerly. Post-infective encephalitis, on the other hand, is notified throughout the year, and cases of mumps encephalitis and encephalitis of indeterminate origin exceed in number those of the arthropod-borne type.

There is a preponderance of males in the sex distribution of equine and St Louis

encephalitis, particularly in the age-groups 10-39 years. This may be due to a greater occupational exposure to the vector mosquito. About 52% of cases of western equine encephalitis occur in children of less than one year of age, whereas under 1% of cases of St Louis encephalitis occur in this age-group. The reason for this is unknown.

Most proven cases of western equine and St Louis encephalitis occur in the Central Valley of California, which is warm and well irrigated and provides a suitable habitat for the vector mosquito *Culex tarsalis*. When cases occur outside this endemic area it has usually been found that exposure took place in the Valley. Western equine and St Louis viruses have been isolated from *C. tarsalis* in nearly every instance before human cases occurred. Data on encephalitis in horses are regularly submitted by veterinary officials, but do not provide much information of value, since serological tests on horses are difficult to interpret, because of the widespread vaccination of horses against western equine encephalitis. There is no proof that the St Louis virus produces any clinically identifiable disease in horses, although serological tests appear to indicate that infection is present.

After the 1952 epidemic a surveillance programme was started, four areas being specially selected for observation. Various methods were used to try to predict the future incidence of the disease. One method was close observation of all hospital cases of fever combined with disturbances of the central nervous system, the object being to detect early any increase in the number of cases; another, with the same object, was the enumeration of all positive laboratory specimens sent to the Laboratory of Viral and Rickettsial Diseases of the State Public Health Department to be tested for encephalitis; and others were estimation of mosquito density and population and weekly examination of a sample to determine to what extent they were carrying the virus. The results so far have not been very conclusive, nor has it been possible to establish any relationship as yet between mosquito infection rates or population and the incidence of human cases. It is likely that other factors are concerned: weather conditions and temperature, perhaps, or the degree of immunity in the population. These possibilities are now under study.

No causative agent has been found in the specimens taken from 20% to 50% of clinical cases of encephalitis, and these cases are classified as encephalitis of indeterminate origin. If they are not due to the virus of western equine encephalitis or of St Louis encephalitis, what is the causative agent ? This question is being studied at the Laboratory of Viral and Rickettsial Diseases. There would appear to be room for improvement in laboratory diagnostic tests. The skin test, which has been tried with some success in California, and would, if proved reliable, help assess the proportion of the population susceptible to the virus and measure the changes caused by sub-clinical infections, also deserves further investigation. This test may indeed be easier to carry out and prove to be more practical than the neutralization test at present in use to prove previous contact with arthropod-borne viruses. Other problems under study are the question of a natural reservoir of the virus —in wild birds or animals, for example, or perhaps even horses; and the sequelae of encephalitis—a field of great interest, for children with proven western equine encephalitis can be watched as they grow up for permanent changes, neurological or other.

Treatment is not very encouraging. No drugs are known to influence the disease, and treatment is therefore purely supportive. Control so far is based on reduction of the density of the *C. tarsalis* population, and about US$ 4 000 000 are allotted annually for this purpose. In spite of all efforts, however, a considerable mosquito population still remains. The human host can be protected by repellents, mosquito nets, mosquito-proof doors and the like, or an attempt may be made to give him artificial immunity; but, although a suitable vaccine against western equine encephalitis exists for horses, none has so far been developed for human beings. Moreover, it is difficult to decide who should be vaccinated, whether vaccina-

tion should be repeated annually, and whether, given the small number of cases, the cost and administration of a vaccine can be justified, particularly as its administration in California would be complicated by the presence of many immigrant workers during the encephalitis season. There would also have to be two vaccines, one against western equine and one against St Louis encephalitis. If there was a vaccine which could be used against western equine encephalitis, a policy of selective immunization could perhaps be practised; pregnant women, for example, or new-born children could be vaccinated so as to reduce the high incidence in children under one.

DEATH CERTIFICATION IN CEYLON

The system of recording births and deaths in Ceylon, instituted in 1867 and improved at the end of the nineteenth century, is of a high standard. Statistics of causes of death are by no means so good; nor indeed can they reasonably be expected to be until each death is certified by a qualified medical practitioner. Some examples of the difficulties of death certification in Ceylon are given in an article by Dr Richard Padley, WHO Statistician in Ceylon, which is due to appear in a forthcoming number of the *Bulletin of the World Health Organization*.

In most urban areas death is reported by the medical practitioner who attended the patient in his last illness. On estates (tea, rubber and the like) which are specified areas subject to certain legislative enactments, the superintendent is responsible for reporting deaths to lay registrars through the nearest medical officer or apothecary appointed under the Medical Wants Ordinance. The medical check of the diagnoses, however, is often of the most cursory nature. In other areas, lay registrars record deaths and their causes and the village headman is required to report any death to the registrars. Sudden deaths are investigated by an enquirer into deaths.

The relatively higher proportion of deaths registered in urban areas is largely due to the fact that these areas include most of the country's hospitals. The death certificate in current use in hospitals is not the WHO international form, and has space only for a single entry for the cause of death. Except in the larger hospitals, too, the certificate is completed by an apothecary on the staff who has no first-hand knowledge of the case but depends solely on the hospital records. Only private medical practitioners are required to use a form approximating to the international form of certificate of cause of death.

Lay registrars are frequently literate only in their own language and script. Since they report deaths in the rural areas, which accounted for over 58% of all deaths in 1956, and for the estates, which accounted for 12.7%, their reports cover the greater part of the population. As is to be expected of lay reports, many record symptoms only as the cause of death; but a disturbingly large number of reports of this kind are submitted also in urban areas where certification is mostly done by medical practitioners. A typical example of such a diagnosis is *rathe*, a popular term meaning redness, which is loosely applied to a variety of erythematous conditions, chiefly in children under one year, and may be totally unrelated to the disease. Another, *mandama*, which means wasting, covers a variety of nutritional deficiency states. These two diagnoses in 1956 accounted for 7.2% of all deaths and 12.2% of all infant deaths. Pneumonia is another prominent diagnosis, to such an extent that it prompts the thought that often it may only be a terminal condition and if the international form of death certification were used its frequency would diminish dramatically. Over 13% of all deaths in 1956 were attributed to senility as the sole cause of death. Nephritis is another common diagnosis which probably means no more than that the terminal condition of the patient was characterized by oedema.

Many causes of death are reported more frequently from the urban than from the rural areas. This may be because the disease is commoner in the towns, or is usually diagnosed or treated in the hospitals, which as a rule are in the towns; but often the reason is that the cause of death is misdiagnosed or undiagnosed and death is attributed to what is only a symptom; or else the diagnostic term is not used or understood or has no vernacular equivalent. Of the diagnoses in 1956 of benign and unspecified neoplasms, for example, or of hyperplasia of the prostate, 90% or more were made in the urban areas; on the other hand, 90% or more of diagnoses of cases of rheumatic fever, dropsy and pyrexia were made in the rural areas. These percentages look inherently improbable as reflections of the actual state of affairs, and closer scrutiny reveals the shaky foundations on which they are built. To take rheumatic fever as an example: 1111 deaths were attributed to this cause in 1956, 1057 of them from rural areas. But of the rural deaths 868 were of persons over 45 years of age, and 417 of these were over 75. The Sinhalese term usually used for the condition, and translated as rheumatic fever, applies to any painful swelling of the joints and would therefore apply not only to rheumatoid arthritis but also to gonococcal, tuberculous or traumatic lesions.

Another illustration of the difficulties that may arise in certification is furnished by typhoid fever. Available epidemiological evidence would suggest that it is commoner in rural Ceylon than in the urban areas. Nevertheless, of the 309 deaths registered in 1956 as due to typhoid fever, 217 (70.2%) were registered in urban areas. Suspected cases, wherever they are, are of course sent by the health services to hospital, but those individuals who for one reason and another die from typhoid fever in the rural areas are probably seldom regarded as cases, and the usual Sinhalese term for the disease—meaning probably no more than continued fever—is coded as pyrexia of unknown origin when it appears on a death certificate. This helps explain the discrepancy between the figures for rural and urban areas.

Many of these difficulties could be overcome by reorganization of the system and introduction of the international form of death certificate, for—Dr Padley points out—far less is recorded about the medical causes of death than is known to the doctor who treated the patient. Lay statements, based on terms derived from *ayurveda*, an ancient system of medicine which relies on the authority of scripture and lacks a tradition of continuous experiment, present a more intractable problem. Much could be done, however, by keeping the translations and terms used under constant scrutiny and by preparing a set of simple instructions for the lay registrars on the priorities to use in selecting the symptoms to report following interrogation of the relatives notifying the death.

New species of mosquito

A new species of mosquito identified by members of a WHO malaria advisory team in Cambodia[1] has been named *Anopheles pampanae* in honour of Dr Emilio Pampana, former Director of the Division of Malaria Eradication at WHO Headquarters. *A. pampanae* is closely related to *A. minimus* and had hitherto been regarded as a variation of that species; the morphological characteristics of both adults and larvae are, however, distinctive enough to separate it from the *A. minimus* complex.

[1] Buttiker, W. G. G. & Beales, P. F. (1959) *Acta trop. (Basel)*, **16**, 63

INTERNATIONAL WORK IN HEALTH STATISTICS, 1948-1958

2. Nature and extent of the problem

This is the second part of an account of WHO's work in international health statistics by Dr H. S. Gear, formerly Assistant Director-General, Department of Central Technical Services, WHO, Dr Y. Biraud, Director, Division of Health Statistics, WHO, and Dr S. Swaroop, Chief Statistician, Health Statistical Methodology, WHO. The first part appeared in the February 1959 Chronicle.[1]

Introduction

Part 1 of this account dealt with historical developments in vital and health statistics up to the end of the Second World War. In the post-war years progress in international statistics received fresh momentum with the creation of the United Nations and of WHO, its specialized agency for health, and it has been further accelerated by the desire of many developing countries to raise their living standards. Before reviewing current developments in vital and health statistics, it is well to consider the nature and extent of the problem, which has two aspects, national and international.

National and international needs in health statistics

By and large, the purpose of vital and health statistics is to contribute to social and economic progress. Existing levels of health and demographic problems have to be studied in relation to the conditions and factors that influence them. For this—and for the study of trends and changes in health conditions—factual knowledge is essential. The more advanced a country, the more precise and penetrating are the studies it has to undertake. On the other hand, a country only just beginning to organize its public health services may do so without waiting for extensive data to be gathered and analysed. For instance, such basic steps as the improvement of environmental sanitation, the establishment of maternal and child health services, and health education—to name only a few—may well precede a full statistical scrutiny of the situation. Nevertheless, even simple kinds of vital and health statistics, such as those which help in locating areas of high mortality and indicating the major preventable diseases, would be helpful. These can be produced relatively easily, either by means of sample surveys or by the establishment of a national health statistics system. But once public health services have been successful in reducing epidemic diseases and death rates, the need arises for precise data on the relative importance of various residual causes of sickness and death. Indeed, it is on the basis of such careful scrutiny that the importance of accidents in childhood and of degenerative diseases in adult life and old age in advanced countries is now being brought out.

It has been truly said that health is indivisible. This is especially apparent when epidemics sweep from one country to another and cover more than one continent: recent examples are the spread of cholera as far west as Egypt in 1947, the world-wide epidemic of influenza in 1957, and the occasional outbreaks of smallpox generated by infection imported into countries of the west. Each country has, therefore, to be constantly on the look-out for what is happening epidemiologically throughout the world. International health statistics provide the necessary world information system.

[1] *Chronicle*, 1959, 13, 67

They are also made use of by various countries to compare their progress in health with that achieved by similar health action elsewhere. Because of these national requirements, international agencies have the unique responsibility of collecting and promptly disseminating statistical information on a world-wide basis.

However, from the international point of view, while the special needs of individual nations are still paramount, the problem is not confined merely to collection and dissemination of information. International co-operation has to be secured so that national health statistical services will produce data in a form that is not only useful to themselves but to the world at large. Moreover, certain health problems affecting groups of countries have to be studied statistically from an international standpoint. Statistics are also important in connexion with the help given by WHO to various countries in the implementation of their health programmes and the introduction of modern techniques in health work. For instance, with the assistance of UNICEF, and in collaboration with other bilateral and international co-operation agencies, WHO has undertaken large-scale campaigns against several communicable diseases—malaria, yaws, trachoma, etc. The treatment of millions of individuals and the spraying of millions of houses by residual insecticides entail the study of the relevant statistics and their proper interpretation. With the assistance of WHO and UNICEF, various other national activities, such as maternal and child health services, school health work, and dental health, are being expanded. The value of this work can be demonstrated only if reliable statistics are maintained, and systems for the collection and analysis of the relevant data must be devised.

In 1946, when the Interim Commission of the World Health Organization assumed the functions of its predecessors, it became responsible for continuing previous work in international health statistics. The work of the Health Organisation of the League of Nations, the Office International d'Hygiène Publique, and the Pan American Sanitary Bureau had been designed to meet then existing needs in the collection of vital and health statistics, the diffusion of knowledge on quarantinable diseases, and the preparation of studies on factors determining the prevalence of disease.

The responsibility for continuing previous work, and the constitutional obligation to undertake additional work in the above-mentioned fields, had an important influence on the preparation of early WHO programmes. The framers of the WHO Constitution had expressed their realization of the shortcomings of the international facilities then existing for the collection of vital and health statistics, and for the investigation of hazards to national, regional, and international health. Hence the appearance in the Constitution of such functions as: the maintenance of epidemiological and statistical services; the control and eradication of communicable diseases; the conduct of research in the field of health; and the establishment of international nomenclatures of diseases and causes of death.

Basic data

There are three main categories of basic data in health statistics:

1. Data on population: size, composition, distribution and growth.
2. Vital statistics, i.e., statistics on live births, foetal deaths, marriages and divorces, deaths, etc. Of these, the statistics relating to live births, deaths, and foetal deaths are of particular interest to WHO.
3. Health statistics, i.e., numerical information required and produced for and by health agencies.

The Statistical Office of the United Nations has assumed responsibility for seeing that vital statistics and data on population are obtained in sufficient detail and in internationally comparable form from an increasing number of areas. In the light of the above needs, the nature and extent of what WHO is

called upon to do in health statistics can be summed up as follows: [2]

To consolidate basic data received from countries, or extracted from various national statistical or epidemiological publications, by: the routine collection of data on diseases, health service facilities, health personnel, and major activities of health services, e.g., vaccination; the collection, elaboration and analysis of vital and health statistics; the keeping of up-to-date records of such statistics, published in the monthly *Epidemiological and Vital Statistics Report* and in an annual volume;

To assist countries in the organization and development of their national health statistical services;

To conduct a general survey of the present situation of vital and health statistics in the world in order to plan a long-term programme of assistance to countries;

To assist national administrations through expert advice by the statistical officers of the Organization or by special consultants;

To assist in improving the collection of national data so as to achieve better international comparability of such data;

To encourage the broader utilization of national committees on vital and health statistics through meetings of representatives of such committees;

To ensure the sound application of statistical methodology indispensable for an adequate evaluation of the work performed and the results achieved;

To process and analyse the statistical data produced in connexion with studies conducted by various units of WHO;

To establish a classification of diseases, injuries, and causes of death, and its application to the compilation of morbidity and mortality statistics.

It is generally admitted that the number of countries producing reliable and adequate basic data is very small. The extent of the problem will be clear from the pages that follows.

[2] Summarized from *Off. Rec. Wld Hlth Org.*, 1958, **89**, 23

Population data

In such a basic matter as the enumeration of human population, the position was far from satisfactory in the ten years preceding the end of the Second World War. The United Nations has reported that during that decade only 44 sovereign countries undertook population censuses. These were distributed as follows: 3 in Africa; 9 in North America; 6 in South America; 9 in Asia and Oceania; and 17 in Europe.[3]

This situation could not fail to have an adverse effect on health work, for no public health programme can be adequately planned or maintained in the absence of such fundamental data as the size of human populations, their age and sex constitution, and their rate of change.

In the ten years since the end of the war, which approximately cover the first phase of WHO's work, there has been a considerable improvement in knowledge of the human population of the world, much of it due to the continuous efforts of the United Nations in this field. In its *Demographic Yearbook* for 1957 the United Nations estimates the population of the world in 1956 as 2737 million, with a margin of error of 5%.[4] An increasing proportion of the world's population is being enumerated by censuses but certain reservations are necessary concerning the completeness and accuracy of the results recorded in many countries which lack experience in census work. The United Nations *Demographic Yearbook* states that population estimates in the majority of countries are still subject to error because of the lack of recent adequate censuses, especially in South-East Asia, the Eastern Mediterranean and Africa: " ...it is shown that estimates for 78 per cent of the world's population in 1955 were based on census counts made since 1945, while 9 per cent originated in partial censuses, surveys, or older enumerations, and 12 per cent had conjectural estimates for a base...only 25 per cent of the countries of the world

[3] United Nations (1956) *Demographic yearbook 1956*, New York, p. 10.

[4] United Nations (1957) *Demographic yearbook 1957*, New York, p. 123

used the natural increase method in 1955. The situation varies, of course, from region to region and it changes also with time. With the taking of more censuses, estimates will have firmer bases ".[5]

Vital statistics

Statistics on births and deaths are in general much less adequate than those on population. It is estimated by the United Nations that while roughly 80% of the world's population has been enumerated in the last decade, only about 42% of births and some 33% of deaths are currently being registered. The reason for this disparity is " that censuses are primarily dependent on the resources and efficiency of the statistical administrations, as well as on the collaboration of the population, while availability of vital statistics depends to a larger degree on the participation of the whole population, which is responsible for the registration of births, deaths, marriages and other vital events ".[6] Africa and Asia are the continents most deficient in such statistics. In 1956, out of a total of 214 countries or territories, only 4 in Africa, 18 in the Americas, and 7 in Asia forwarded comprehensive birth and death statistics to the United Nations, though it is necessary to qualify this statement with the remark that comprehensiveness is not necessarily always allied to accuracy. Difficulties in obtaining adequate vital statistics are rarely due to any single direct cause. Even in a single country there may be much variety in the extent to which registration of vital events is carried out. In almost all countries the degree of efficiency in collecting such material varies from possibly very high in cities and towns to very low in rural areas.

This deficiency in knowledge of the occurrence of births and deaths in the world is a barrier to the full discussion, let alone the planning and execution, of programmes for improving health. Its nature is such that many international and national health programmes can be based only on guesswork about what is needed.

Health statistics

It is axiomatic that sound health statistical and epidemiological systems cannot be expected in a country lacking the usual fundamental administrative and social services. As a country improves its local government and provides its people with a gradually widening series of social services, it reaches a stage when it is possible for it to obtain the essential facts for a study of its social, economic and health problems. At the present time, there are serious gaps in the collection of data on such matters as causes of death and disease by age, sex and season, or even causes of death alone. This is confirmed by the fact that in 1958 only the following returns were available to WHO in this connexion:

Subject	*Number of countries and territories*
(i) causes of death	93[7]
(ii) causes of death by age and sex	77
(iii) incidence of communicable diseases by season	176
(iv) incidence of other diseases	7

It is estimated that about a further 100 countries and territories would need to submit returns before even a simple picture of world mortality and morbidity can emerge.

In 1953 WHO sent a questionnaire to its Member States to elicit information on the types of health statistics and related vital statistics available in different countries, on how they were obtained, and to what extent they were being transmitted to international organizations.[8] A certain number of countries answered fully; others did not answer at all, or gave very incomplete answers, since comprehensive answers would have involved them in months of patient research. The replies received show that in advanced

[5] United Nations (1957) *Demographic yearbook, 1957*, New York, p. 21

[6] United Nations (1956) *Demographic yearbook 1956*, New York, p. 14

[7] Data on causes of death from some 50 countries only are considered by WHO as sufficiently reliable for publication in its *Annual Epidemiological and Vital Statistics.*

[8] *Bull. Wld Hlth Org.*, 1954, 11, 201

countries, even though health statistics are numerous, they are varied and scattered among many government departments other than the health department, for example, the social welfare administration (social insurance returns, hospital statistics), the defence department (statistics of the army, navy and air force), and the education department (school medical inspection returns, numbers of graduates in medicine and allied professions). In many countries the provincial or municipal authorities are responsible for health, and do not necessarily supply statistics to the central government; and where statistics are supplied, they are not necessarily uniform from province to province. In some countries there is decentralization of government, with consequent decentralization of health statistics; or the organization is federal, with a like result. Nor is the terminology used uniform: medical schools differ greatly in background and methods of training, and diagnoses are couched in terms that vary not only from country to country but also within the same country. Again, a " bed " in a remote jungle hospital can hardly be placed on a par with a " bed " in a large teaching hospital in an advanced country, although both are called " beds ". Similarly, the meaning of " doctor ", " nurse ", etc. will differ from country to country, or even within one and the same country.

Statistics on causes of death

The statistics available to WHO on causes of death suffer from further defects. In many countries, there are not enough physicians to attend every dying patient and certify the cause of death. If it is recorded at all, it will be by a lay registrar who may be merely guessing from crude information provided by relatives. Only a few countries have medical services with sufficient staff trained to give an accurate medical certificate of death. Indeed, the countries giving satisfactory information, both on the actual occurrence of death and on its causes, could be numbered on the fingers of one hand. The usefulness of material collected on a world-wide basis for regional or world analysis is therefore exceedingly limited. To its inherent defects of inaccuracy and incompleteness there must be added the serious difficulty of determining comparability between one country and another.

Quarantinable disease statistics

As soon as international health co-operation began to develop, the need for statistical and epidemiological data on the so-called quarantinable diseases became apparent. Hence such information is available in some detail right back to the beginnings of such predecessors of WHO as the Pan American Sanitary Bureau, the Office International d'Hygiène Publique, the League of Nations Health Organisation, and UNRRA. The information collected by all these organizations had a dual purpose.

Primarily it was collected with the intention of guiding countries in any administrative action they wished to take against the threat of invasion by quarantinable diseases from other countries. Indeed, this was the major purpose of the comprehensive network of stations established for the collection and diffusion of data on quarantinable diseases. The second purpose was the scientific determination of some of the circumstances governing the behaviour of these diseases, particularly when they took an epidemic or pandemic form. The statistics obtained had a certain value in showing the historical trends and geographical diffusion of each disease during a period of fifty years or more.

WHO inherited a complete system for the collection and reporting of quarantine information; this involved dealing annually with some 7000 routine reports from health and statistical authorities. In addition to *ad hoc* telegraphic notifications, the diffusion of the information was ensured by systematic broadcasting through a wide network of stations with occasional telegrams and routine air-mailing of weekly periodicals from four focal points.

This system of collection and diffusion, valuable though it has been in dealing with the threat of the international spread of

quarantinable diseases, could have only a restricted scientific value, owing to the probable incompleteness of many of the basic notifications from areas without physicians or health administrations.

Morbidity statistics

In proportion as the campaigns against the great killing scourges have met with success, interest has grown in causes of diseases which are widespread, but not in themselves immediately fatal. This type of morbidity has figured with increasing prominence in the discussions of international councils of statisticians and epidemiologists in the last two or three decades, and its statistical and epidemiological definition and analysis have proved particularly difficult. Whatever the causes of this morbidity—whether they were acute, communicable, chronic, neoplastic, or accidental—they raised basic questions of terminology, classification, and measurement by suitable indices. Until these were answered, epidemiologists and statisticians could scarcely employ any refinement of analysis in defining the significance of the various causative and correlative factors. In turn these raised other difficulties, as for example, that of bringing uniformity into the collection of morbidity data from different regions where methods of diagnosis and nomenclatures varied in efficiency, completeness and form.

One particularly troublesome statistical problem has been that of the hospital record. Even though case records have accumulated in hospitals for generations, no simple means has yet been evolved for the international use of what superficially appears to be an invaluable source of clinical and pathological material for epidemiological purposes. This general statement does not belittle the valuable contributions which have been made, not only to clinical medicine and pathology, but also to epidemiology and public health, by numbers of individual studies based on morbidity records from hospitals in many countries. It is only in the present decade that international studies have been undertaken to develop their comparability, an important facet of the more general problem of comparability in morbidity statistics.

Statistical methodology

By the end of the Second World War, considerable developments had taken place in the theory of probability, sampling methods, and techniques for field trials, surveys, and controlled laboratory experiments. These techniques were obviously urgently needed, and the fact that this methodology had at first appeared in countries with well-organized social, medical, and statistical services was no argument for delaying the application of some of the newer techniques in countries lacking them. Indeed, many of these techniques were admirably suited to epidemiological and statistical enquiry in almost any community, however primitive its condition or however awkward its physical environment. Above all, the method of sampling had been so improved that it could be operated at relatively small cost, provide up-to-date data, and give a reasonably accurate picture of the health situation.

A technique of some value in epidemiological and statistical work is that of the survey. Early surveys of such matters as the incidence of disease, based on hospital populations, out-patient records, or general practitioners' returns, omitted many of the checks and adjustments required to remove distortions caused by such factors as differing age and sex composition. By the middle of the present century, however, the limits and fallacies, as well as the advantages and potentialities, of surveys had become much clearer. The technique of the survey had been so developed as to make it suitable for regions of the world from which no records of diseases had been previously available. The hazards of surveying such highly selected populations as hospital patients or industrial communities were known, and frequently could be overcome. It had therefore become possible for experienced people to use surveys profitably in the service of international health statistics.

At the same time a fuller appreciation was being gained of the application of statistical

analysis to recorded results of clinical trials, field observations, and similar investigations. This showed the place that these techniques should have in the training of health workers destined for work in under-developed countries.

When WHO launched its programmes it was thus accepted that it had a duty to make health statistical techniques available to administrations, educational institutions, and research workers in countries co-operating in international health programmes. This was an urgent task, as failure to use such techniques in planning or executing large programmes in diverse communities could be wasteful of money and seriously delay achievement of aims, besides perpetuating wrong technical theories to the disadvantage of other plans or programmes.

International statistical classification of disease

In the earlier revisions of the International Lists of Causes of Death, some doubt had been expressed as to their suitability for use in countries with few or poor health and social services. In 1938, the Conference for the Fifth Revision of the International Lists had particularly mentioned the need to prepare simpler lists, the application of which would be guided by suitable rules for use in countries not having a full vital statistical registration. Furthermore, statisticians in Africa and Asia had become aware of the unsuitability of the full detailed list even before the Second World War. Therefore, when preparations were launched, after the Second World War, for the sixth revision of the Lists, proposals had already been submitted for a study of this problem. An allied problem was the dependence of the International Lists of Causes of Death on medical certification. Earlier assumptions to the effect that only returns submitted by medical practitioners were of value had to be discarded, and the hard fact accepted that in most regions of the world full and accurate medical certification could not be achieved within the foreseeable future. This called for the study of methods of collecting records of causes of death in cases where the attendance of a fully qualified medical practitioner could not be taken for granted. Methods had to be simple, efficient, and economical.

Co-operation and co-ordination

It is thus clear that, at the time of WHO's foundation, there was a considerable lack of even the basic facts required for the elaboration of international health programmes. The situation was bad enough with respect to the fundamental matter of enumerating population, but was even worse as regards the collection of important items concerning the cause of death and disease. The resources for gathering such facts were almost non-existent in some areas. This was the challenge. It could be met, theoretically, with a certain degree of optimism, in that much experience had been gained in methods and techniques suitable for application in any type of country for which data were required for the conduct of health programmes.

To meet the needs and apply the newer measures meant collaboration with national administrations and with many other organizations and agencies. It was important that governments, and their technical departments and teaching institutions, should give their full support. Medical, nursing, and allied professions had to be persuaded to plan health programmes in such a way as to give due place to the study of health problems and the collection of essential health statistics. A large programme had therefore to be undertaken to gain the support and goodwill of these various agencies and individuals, and, as will be seen in due course, it included, *inter alia*, the creation of an important system of national committees on vital and health statistics.

Internationally, too, much preparation was necessary to secure adequate liaison with all inter-governmental and governmental bodies concerned in health programmes. Naturally, the first to be considered among these was the United Natjons itself, which had the responsibility of collecting such basic vital data as the numbers of populations, their age and sex composition, and vital statistics. It was encouraging that WHO would have the

powerful support of the United Nations in appeals to countries and institutions for improved statistical services.

In that many health problems have facets to be examined by such other agencies as FAO, ILO, and UNESCO, the need for liaison with these agencies was accepted by WHO. The co-operation of individuals and of the non-governmental agencies had also to be obtained; in fact, no agency had been more helpful in the earlier history of international statistics than the International Statistics Institute.

The importance attached by WHO at the outset to co-operation and co-ordination in its international programmes has undoubtedly been responsible for much of their success.

Reports of Expert Groups

Expert Committee on Health Statistics *

For several years, the World Health Organization has been concerned to improve the quality of morbidity and mortality statistics and especially to achieve a greater degree of international comparability. Progress so far has been slow, one of the main difficulties being that the methods of measuring morbidity and the definitions of the terms in common use differ from country to country.

With the recent publication of the sixth report of the WHO Expert Committee on Health Statistics,[1] however, a further step has been taken towards the establishment of a uniform terminology for morbidity statistics. Definitions are proposed for the terms "incidence", "period prevalence", and "point prevalence", and recommendations made regarding the correct employment of these terms. The various ways in which duration of illness may be computed for statistical purposes are also discussed, and it is pointed out that the date of onset and the date of recovery should be defined on the basis of uniformly applied criteria. The report then considers the application of these basic concepts—if necessary, in modified form—to general surveys of sickness, hospital in-patient morbidity statistics, industrial sickabsence statistics, and social security morbidity statistics. It is recommended that, as far as possible, the concepts, definitions, and terminology proposed should be adopted for use in the national or international presentation of morbidity statistics and that, after a period of trial, countries should report to WHO on the acceptability of these terms as standard definitions.

In connexion with long-range plans for improving vital and health statistics, the report reviews those sections of the International Classification of Diseases which appear to be most urgently in need of critical appraisal in preparation for the eighth revision. The three sections recommended for early attention are: causes of stillbirth; mental, psychoneurotic, and personality disorders; and cardiovascular diseases. Studies on certain aspects of the classification of causes of stillbirth and that of cardiovascular diseases are already under way in some countries. The report emphasizes the need for international co-ordination of such studies and contains a number of recommendations with this aim in view.[2]

* WHO Expert Committee on Health Statistics (1959) *Sixth report, including the third report of the Sub-Committee on Cancer Statistics* (*Wld Hlth Org. techn. Rep. Ser.*, No. 164), 43 pages. Price: 1/9, $0.30, Sw. fr. 1.—. Also published in French and Spanish.

[1] Members of the Committee: Dr M. J. Aubenque, France; Mr F. F. Harris, Canada; Dr Gertrude Kallner, Israel; Dr Forrest E. Linder, USA (Vice-Chairman); Dr W. P. D. Logan, United Kingdom (Chairman and Rapporteur); Dr B. Mikat, Federal Republic of Germany; Dr B. Škrinjar, Yugoslavia. Representatives of other agencies: Mr Donald V. McGranahan, UN; Miss Nora P. Powell, UN; Mr R. J. Myers, ILO. Secretariat: Dr Y. Biraud, WHO; Dr Marie Cakrtova, WHO; Mr J. Nielsen, WHO; Dr B. Pirc, WHO (Secretary); Dr S. Swaroop, WHO.

[2] See article on page 205.

Great importance is attached to regional meetings of health statisticians at which the health statistical situation in the countries concerned can be reviewed and the progress analysed. Among subjects that could be profitably discussed at such meetings, the following are suggested: the health statistical systems in use in the various countries; education and training of health personnel in health statistics; the International Classification of Diseases and its application to various fields of health statistics; and methodology and results of health surveys.

The report also appraises the activities of national committees on vital and health statistics which are providing an important stimulus to the development of health statistics in a large number of countries. It is urged that WHO should be kept informed, at least once a year, of the activities of these committees.

During recent years, advice on methodology and technical help in overcoming statistical problems have been provided on an increasing scale by the statistical services of WHO, both within the Organization itself and to individual countries. At the same time, a considerable amount of statistical material has been accumulated, not only in the course of the routine collection of health statistics but also from WHO-sponsored projects. The report urges that the possibility of subjecting this material to statistical analysis should be explored, with a view to making the resulting information useful to a wider range of health workers.

Another problem briefly reviewed is the selection of health indicators for measurement of levels of living. It is pointed out that health indicators may also be used for other purposes, for instance, in gauging the needs of health services and their achievements or as one of the bases for framing social policy, and that there is a connexion between health indicators appropriate for measurement of levels of living and those needed for social policy. On the other hand, no single health indicator exists which can be considered objective, sensitive, and meaningful, and which, at the same time, is available in all types of communities. The opinion is therefore reached that " for international comparisons recourse must be had simultaneously to several health indicators of varying degrees of meaningfulness and availability ".

As noted in the report, progress is being made with the preparation of a series of WHO manuals on health statistics methods and work on some of these has already reached an advanced stage. The Committee reviewed the envisaged programme, which is shown in an annex, and expressed satisfaction that the particular needs of less developed countries have been taken into account.

A second annex contains the third report of the Sub-Committee on Cancer Statistics. This report is concerned mainly with methods for measuring the incidence and prevalence of cancer; the purpose and uses of cancer registration, with recommendations on starting and maintaining a register; epidemiological studies on cancer; and the statistical classification, nomenclature and clinical staging of cancer. There is also a brief discussion of studies which have been carried out to determine the reliability of cancer diagnoses on death certificates. It is recommended that such studies should be continued, particularly where the mortality figures published by WHO reveal substantial differences between countries.

Plague: Epidemiology and Control *

In spite of the remarkable reduction of the world incidence of plague, the disease is still a potential danger. The WHO Expert Committee on Plague,[1] which met in Geneva in September 1958, studied the various problems connected with this disease and has just published its report on the subject.

Epidemiology

Wild rodent plague

The Committee made a comparative study of the epidemiological characteristics of plague in various countries and regions of the world (China, India, Java, Mongolia, the USA, the USSR, Central Africa and the Eastern Mediterranean Region). In the course of this study it became obvious that a great deal more is now known about the species of wild rodents that act as reservoirs of *Pasteurella pestis*, and about their ecology, and that progress has also been made in identification of the parasite insect vectors of plague. Attention was drawn to the significance of the co-existence of wild rodents and commensal rodents in the vicinity of human habitations. The possibility of transfer of wild rodent fleas to commensal rats has been experimentally demonstrated with radioactively tagged fleas.

Investigations into the resistance of rats to plague have shown that many species are refractory to the disease. Whereas formerly it was believed that markedly resistant rodents were of little importance in the epidemiology of plague, it is now considered that such animals play a decisive role in the perpetuation of the disease because they ensure the survival of the infected fleas. Perpetuation, in fact, depends upon the maintenance in the rodents of a balance between resistance and susceptibility to the infection.

Virulence of P. pestis

The question of the virulence of *P. pestis* should be approached from the ecological rather than from the laboratory angle. Apart from the knowledge to be acquired from this kind of study, it is admitted that the strains isolated from human plague victims are almost invariably of maximum virulence when tested on laboratory animals known to be susceptible. It is also recognized that variations in virulence, if present under natural conditions, do not appear to interfere with the perpetuation of plague.

Vector efficiency

Work on methods of evaluating the vector capacity of plague-infected fleas has shown that this capacity is extremely complex and may vary even among different strains of one and the same species. One important epidemiological factor noted is that, under natural conditions, many plague-infected fleas are able to survive in a starved condition for at least a year. It is obviously important from the epidemiological standpoint that these studies should be pursued.

Control

The present state of plague therapy

The antibiotics are extremely useful in the treatment of severe cases of plague, especially of the pneumonic form. Streptomycin, however, is liable to produce highly resistant variants of *P. pestis*; in these cases, prompt application of another antibiotic may save the patient. The drugs of the tetracycline group are as effective as streptomycin, and good results have been obtained with mycerin and bacteriomycin. The sulfonamides are effective and, in countries where only limited means and staff are available, they would be the obvious choice for mass campaigns, sulfamerazine being the most

* WHO Expert Committee on Plague (1959) *Third report* (*Wld Hlth Org. techn. Rep. Ser.*, No. 165), 42 pages. Price: 1/9, $0.30, or Sw. fr. 1.—. Also published in French and Spanish.

[1] Members of the Committee: Dr S. Anwar, Indonesia; Dr M. Baltazard, Iran (Rapporteur); Dr R. Devignat, Belgian Congo; Dr R. B. Heisch, Kenya (Rapporteur); Dr Karl F. Meyer, USA (Chairman); Dr B. Pastukhov, USSR; Dr S. C. Seal, India. Secretariat: Dr M.-J. Freyche, WHO; Dr M. Giaquinto, WHO (Secretary); Dr R. I. Hood, WHO; Dr A. Macchiavello, WHO; Dr D. W. Micks, WHO; Dr R. Pollitzer, USA (Consultant); Mr J. W. Wright, WHO.

satisfactory. It must be remembered that overdoses of antimicrobial drugs may release toxin and it is therefore advisable to avoid the simultaneous use of different antimicrobial substances.

In serotherapy, the use of unpurified horse and donkey antiplague serum has had unfortunate results, and it will be necessary to increase production of purified antitoxic sera.

Vaccination and chemoprophylaxis

It is not known to what extent human beings are immune to plague. However, vaccination—with living or killed germs—appears to reduce susceptibility to the disease and to increase the efficacy of the antimicrobial drugs. For this reason, vaccination with existing vaccines should be continued, at least until more effective vaccines are found.

The Committee reiterated the recommendations made in the second report of the Expert Committee on Plague regarding the value of antimicrobial drugs for the prophylaxis of contacts of persons suffering from pneumonic plague.[2] In the USSR, in view of the relative frequency of the pneumonic form of the disease, the authorities apply chemoprophylaxis to all contacts of both pneumonic and bubonic plague; the treatment consists of a daily dose of 1 g of streptomycin for five days.

Measures for the control of wild and commensal rodents

The large-scale campaigns for the suppression of wild rodents carried out in the USSR have provided valuable information. The most common method used was the scattering of poisoned grain from aircraft. The poisons used were zinc phosphide, barium fluoroacetate (more effective but also more dangerous for animals and for man), chloropicrin and cyanide preparations. Immense difficulties have been encountered in these large-scale campaigns, which require an enormous staff, but they nevertheless demonstrate the possibility of eradicating plague from very extensive areas. Biological control methods were found to be ineffective and sometimes dangerous.

In connexion with the control of commensal rodents (*Rattus norvegicus*, *Rattus rattus* and *Mus musculus*), the Expert Committee associated itself with the recommendations made in the eighth report of the WHO Expert Committee on Insecticides [3] on environmental sanitation and the use of anticoagulant rodenticides (warfarin, Pival, coumachlor and fumarine) and quick-acting poisons (ANTU, sodium monofluoroacetate), and on baiting problems.

Control of plague vectors

Up to the present time no effective resistance to insecticides has been noted in the insect species involved in the propagation of plague. In general, DDT dusting is extremely effective against fleas, and the method of patch dusting, in accordance with standards laid down by the Expert Committee on Insecticides,[4] is especially to be recommended on account of its efficacy and cheapness and the ease with which it can be applied. A 10% powder should be used against the less sensitive ectoparasites, and very good results have also been obtained with 1.5% dieldrin and 2% aldrin dusting powders.

Diethyltoluamide, undecylenic acid, propylacetanilide and benzyl benzoate are good flea repellents for use on clothing.

Organization of plague control services

In the Committee's opinion a central control service should be set up in all plague areas, with responsibility for the planning and direction of the various peripheral services and detachments. The peripheral units should be under the direction of fully qualified medical officers, who in turn should have at their disposal an adequate team of specialists for the various branches of the work and an ample supply of equipment, antimicrobial drugs and insecticides. A constant watch must be kept for the first signs of plague in rodents and fleas, so that preventive measures may be applied at the

[2] *Wld Hlth Org. techn. Rep. Ser.*, 1953, **74**, 6-8

[3] *Wld Hlth Org. techn. Rep. Ser.*, 1958, **153**, 44

[4] *Wld Hlth Org. techn. Rep. Ser.*, 1958, **153**, 42

earliest possible moment, without waiting until cases of human plague have occurred.

Unfortunately, as plague becomes rarer, it is less often diagnosed in time, and in order to avoid this, medical practitioners, nurses, midwives and other public health personnel who may come across cases of plague must be acquainted with the symptoms of the disease and with its emergency treatment.

Organization of epidemiological surveys on wild rodent plague

As a rule, a wild rodent plague survey should be carried out: (*a*) when any human case has been notified; (*b*) in case of an epizootic; (*c*) when wild and commensal rats are in close contact with man. It is not possible to recommend a system applicable to all wild rodent plague foci, but the survey should always include examination of the rodents and of their ectoparasites. This implies a considerable staff, rapid and well-equipped means of transport and adequate laboratory installations. An annex to the report gives details on the organization and techniques of these surveys, with special reference to: relations between survey personnel and local public health and other officials; the need to inform the public; the trapping of rodents and collection of ectoparasites; dispatch of specimens to the laboratory; field autopsy and examination of specimens in the central laboratories.

Recommended research programme

The Committee recommended that all possible attention be given to the following research programme:

(1) systematic research on wild rodent plague in all endemic areas;

(2) study of the variability of *P. pestis* under natural conditions, and co-ordinated research on its virulence;

(3) study of the pneumotropism of plague strains;

(4) determination of methods of ascertaining the presence of the infection in the absence of definite plague symptoms;

(5) study of the relationship between *P. pseudotuberculosis* and *P. pestis*, and of the natural occurrence of the first-named micro-organism in rodents and in man;

(6) systematic search for more potent plague vaccines;

(7) study of the biological control of vectors with special reference to their infection with microsporidia and other pathogenic protozoa;

(8) organization of reference laboratories;

(9) granting of facilities for exchange visits between heads of research services in the most important plague areas;

(10) exchange of literature, information and reports on plague.

Public Health Nursing *

"As the concerns of a public health service move from measures of control and environmental management to the broader social and educational approach which characterizes the philosophy of public health today, the service of the public health nurse will make an increasing contribution to the improvement of the health and welfare of the people." In this conviction the WHO Expert Committee on Nursing [1] devoted its fourth report to a consideration of the functions and the administration of public health nursing services, and the education desirable for the personnel concerned.

* WHO Expert Committee on Nursing (1959) *Fourth report: Public health nursing* (*Wld Hlth Org. techn. Rep. Ser.*, No. 167), 31 pages. Price: 1/9, $0.30, or Sw. fr. 1.—. Also published in French and Spanish.

[1] Members of the Committee: Miss T. K. Adranvala, India (Vice-Chairman); Mrs E. de Faria Alvim, Brazil (Chairman); Professor E. D. Ashurkov, USSR; Miss R. Freeman, USA (Rapporteur); Miss G. Frère, Belgium; Miss A. A. Graham, United Kingdom; Mrs S. Nagano, Japan. Secretariat: Miss L. M. Creelman, WHO (Secretary); Miss E. Hilborn, USA (Consultant); Miss E. Hill, WHO; Dr J. S. Peterson, WHO.

Functions of the public health nurse

Certain basic functions are common to public health nursing services all over the world. Perhaps the most fundamental is the care and rehabilitation of the sick in the home; closely allied to this task is the guidance of individuals and groups in how to keep well, how to deal with particular problems of health and hygiene, and where to turn for assistance in other difficulties. The public health nurse is a link between the general public and the network of medical and social services. Not only does she interpret the recommendations of the physician to those in her care; she can also provide him with invaluable support both by relieving him of certain technical operations and by keeping him informed of factors in the personality or background of her patients which may affect their condition or their treatment.

At a step away from the immediate practical functions of the individual nurse, it becomes apparent that she is also an important instrument of the entire public health programme. She assists in the collection of health statistics by encouraging the reporting of births and communicable disease; she assists in the sanitation and accident prevention programmes by observing and reporting unsafe water or food supplies, or accident hazards in homes and places of work; and she contributes to the control of disease by recording items of epidemiological significance. Through studying the incidence and cause of school absenteeism she may contribute to the understanding of school and family health problems. By counselling the families she visits she supports the nutrition programme and helps in the improvement of working and living conditions in the home. Nor is her influence confined to implementing the public health programme; at a certain remove, she plays a distinct role in its actual planning, since her experience is drawn upon by planning authorities at all levels whenever questions affecting her particular field of interest arise.

In many countries, because of shortage or inaccessibility of physicians, public health nurses also undertake delegated medical responsibilities. In addition to this limited delegation due to necessity, however, there is bound to be a constant and more permanent transfer of certain traditionally medical functions to nurses as a normal development of the two professions. Before the standardization of temperature determinations by the use of a mercury thermometer, for example, the taking of temperatures was a medical prerogative; after the procedure became more standardized it became a task of nursing. Today, many other technical skills such as the taking of blood tests, the giving of intravenous medications, and the administration and reading of tuberculin patch tests, are being transferred from the medical to the nursing sphere of activity. Similar assumption of non-nursing functions may occur in the absence of social workers or of other health workers. Public health nursing tasks may, in fact, vary greatly from country to country, being affected by the general level of economic development, the degree of urbanization or industrialization, characteristics of climate and terrain governing living conditions, social and cultural factors, and the level of health and vitality of the population. In the opinion of the Expert Committee, WHO might well make a valuable contribution to future organizational development by sponsoring inter-country evaluation studies of public health nursing services.

Administration of public health nursing

The importance of this aspect to the whole health programme is apparent when it is considered that the efficiency of the nursing service must constantly influence and be influenced by developments in related disciplines. Hence nursing plans should be co-ordinated with those of all other community health services, and policy-making and programme-planning should allow for participation of the staff at all levels of responsibility.

The size and composition of staff needed to carry out an adequate public health nursing programme depend upon many, and

locally varying, factors: public demand for nursing care may not coincide with the true needs, while the potential of nursing personnel will be determined by financial and educational resources and the general level of training of available nurses. Effective planning under such diverse conditions cannot be a routine procedure; it demands a clear apprehension of the specific objectives, proposed methods and anticipated outcome of every project.

Efficient administration depends greatly on the quality and appropriate deployment of personnel. Consideration should be given to the wider employment of male nurses and auxiliary workers, whose contribution has been most effective. Staff must be accorded full scope for professional development; this requires a careful system of supervision, a constant reinforcement of methodology (best provided by consultant staff who are expert in a particular field—for example, mental health or tuberculosis where these are large-scale problems), the provision of opportunities for higher education, and in-service training and refresher courses. Workers need continuing help in appraising the work they are doing, in developing intelligent methods of selection of priorities, and in improving the quality of service; work progress and results should therefore be evaluated periodically both by the nursing administrative staff and by medical or general administrative personnel. Standards of service should be clearly defined as a basis for evaluation.

Education for public health nursing

The Committee felt that preparation for public health nursing should be based on a sound general nursing education covering preventive and social, as well as curative, nursing. Specific public health tuition is, of course, also essential: the basic nursing education programme should include instruction in epidemiology, vital statistics, community health organization, and public health nursing management, with perhaps additional teaching on school or occupational health, and social and health legislation. Clinical experience of some duration in a public health setting, such as a public health agency or a hospital out-patient department, must be arranged, and opportunities for collaborating with allied professional workers should be encouraged. Post-basic nursing courses may supplement, or if necessary replace, the preparation given earlier; they should aim at the same integration of public health and nursing content as characterizes the recommended basic programme. Courses devoted to special fields—midwifery, mental health, occupational health—may provide useful clinical experience.

Of particular importance is the training supplied for senior posts—supervisors, consultants, administrators and teachers. The complexity of inter-professional relationships in public health nursing calls for highly responsible leadership, combining technical competence in the allotted function (teaching, administration, etc.) with expertness in the clinical field of practice. Such advanced education should be offered at university-graduate standard and in an inter-disciplinary setting, so that public health nurses may acquire experience of team-work with student epidemiologists, sanitarians and medical officers.

The role of auxiliary workers in public health is an important one, since there is increasing scope for the performance of many duties demanding less independent judgement than is expected of professional nurses. Training programmes for auxiliaries should be extremely flexible in both content and duration to fit the needs of the country concerned and the degree of responsibility to be assumed. Where adequate supervision is provided and the skills acquired are maintained through continuing study and refresher courses, the contribution of auxiliaries to the smooth running of a public health programme can be of great value.

Research

In medicine, teaching and research are considered an integral part of practice. So

far this has not been true of the nursing profession, and the advancement of public health nursing could be accelerated by the adoption of this principle. The Committee considered that there is a need for a cadre of nurses capable of planning and carrying out research aimed at developing nursing practice, and of collaborating with other researchers on team studies in the public health field.

Here the education programme is of the first importance. Owing to the great variations in training, it is possible for nursing students to reach graduate status with quite inadequate scientific knowledge; preparation for research work must therefore be based on a thorough training in science, with graduate-level courses in public health and related fields such as social sciences, epidemiology or physiology.

The future

Over the past few decades, public health nursing has shown a great capacity for change. The work of the individual nurse is geared to the demands of public health as a whole—demands which are continually expanding, but which present the greatest variety according to conditions prevailing in different parts of the world. Now is a suitable time for careful evaluation of the types of services needed in the different countries, the kind of personnel who should render them, and ways of best providing them in the future.

Zoonoses *

In August 1958 the Joint WHO/FAO Expert Committee on Zoonoses [1] re-defined the term "zoonoses" as "those diseases and infections which are naturally transmitted between vertebrate animals and man"; more than 100 of these are now recognized. Domestic animal reservoirs of such diseases are a source of considerable danger for man, and the Committee felt that, within national administrations, close collaboration in the development of animal disease control between the various agencies concerned (particularly the medical and veterinary services) was highly desirable.

The following major zoonoses were discussed: salmonellosis, leptospirosis, animal tuberculosis, anthrax, psittacosis (ornithosis), Q fever, arthropod-borne viral encephalitides, and hydatidosis. Taking each of these diseases in turn, the Committee considered its incidence, the role played by the different animals involved, and the most suitable methods for control. Problems of diagnosis, the life-cycles of infecting organisms, links in the spread of infection to man, the development of appropriate vaccines, and the use of antibiotics in the treatment of several of these conditions were the salient points in the discussion.

Salmonellosis

Not only is the reporting of Salmonella infections in man and animals on the increase, but also apparently the real incidence. This may well be attributable to the growing national and international distribution of foods susceptible of contamination, such as meat, eggs and egg products, milk, fish and vegetable products. The need for a high standard of hygiene, particularly in abattoirs and meat-packing plants, cannot be overemphasized. The control of animal infections by treatment and vaccination has sometimes been reported as effective, but the Committee

* Joint WHO/FAO Expert Committee on Zoonoses (1959) *Second report* (*Wld Hlth Org. techn. Rep. Ser.*, No. 169), 83 pages. Price: 3/6, $0.60, Sw. fr. 2.—. Also published in French and Spanish.

[1] Members of the Committee: Professor M. Abdussalam, Pakistan; Dr W. C. Cockburn, United Kingdom; Dr R. M. Mendy, Argentina (Vice-Chairman); Dr K. F. Meyer, USA (Chairman); Dr J. A. R. Miles, New Zealand (Vice-Chairman); Dr J. Müller, Denmark; Dr J. Parnas, Poland; Dr A. W. Stableforth, United Kingdom (Rapporteur); Professor K. Wagener, Germany; Professor J. W. Wolff, Netherlands. Secretariat: Dr B. D. Blood, PASB; Dr E. C. Chamberlayne, PASB; Sir Thomas Dalling, FAO; Dr E. A. Eichorn, FAO (Joint Secretary); Dr M. M. Kaplan, WHO (Joint Secretary); Dr J. H. Steele, USA (Consultant).

found that they could not generally recommend this procedure.

Leptospirosis

Intensive investigations have uncovered a wide host range in leptospirosis, not only among domestic animals but in a variety of wild ones. One of the most dangerous leptospiral infections in man is still considered to be that caused by *Leptospira icterohaemorrhagiae*—Weil's disease—but serious infections with other serotypes also occur after exposure to contaminated water. The widespread infection of rodents and other mammals is an important source of disease for domestic animals and man; epizootics have been reported in many countries.

The Committee made various recommendations on classification, typing and nomenclature. They recognized the agglutination-(lysis) test as the method of choice in serological diagnosis, and considered that the isolation of leptospires by culture or animal inoculation should be attempted whenever possible. Definitions of serogroup, serotype and sub-serotype, at present formulated serologically, may eventually be based more satisfactorily on biochemical methods.

In the prevention of human leptospirosis good results have been claimed for vaccination using formolized or merthiolate vaccine. Animal vaccination could not be considered as completely successful because a carrier state occurred within individual animals, although clinical disease was apparently reduced. High-potency purified antiserum applied at an early stage has given excellent results in the treatment of Weil's disease; experiments with penicillin and other antibiotics have given conflicting results.

Tuberculosis in animals

During the past few years considerable progress has been made in the eradication of tuberculosis in cattle in many parts of the world—doubtless largely because of systematic application of the tuberculin test in cattle and removal of reactors; this has also resulted in a great reduction of bovine tuberculosis among the human population. Non-specific reactions to the test, however, continue to present a problem requiring further elucidation. The Committee felt that the tuberculin-testing method might be prejudiced by attempts to eradicate the disease in cattle through vaccination with BCG vaccines and vole strains, which tend to create a sensitivity to tuberculin. They also felt that the chemotherapy of animals should be discouraged because of poor results, impracticability and high cost.

Other animal sources of human infection mentioned were monkeys, dogs, cats, parrots, goats and pigs.

Anthrax

This disease causes considerable economic losses from animal deaths and the cost of vaccination programmes, while the annual number of human cases throughout the world is estimated at probably anything between 18 000 and 90 000. The principal sources of anthrax are infected feedingstuffs and fertilizers, and animal by-products such as hair, wool, hides and skins.

For control to be established, the responsibilities of health and agricultural authorities should be interlocked, and provision should be made for rapid and adequate local diagnostic facilities; the destruction, unopened, of suspect carcasses; regular subsidized livestock-vaccination programmes; and education of farmers in recognizing the early signs of the disease, in dealing with outbreaks in dairy herds, and in noting its post-mortem appearances in the abattoir.

Human anthrax should be controlled by State-subsidized disinfection of potentially contaminated animal by-products used as raw materials in industry, by the maintenance of import restrictions on such products, and by vaccination of persons coming into contact with them. Both human cutaneous and animal anthrax have been successfully treated with penicillin and other antibiotics.

Psittacosis (ornithosis)

Some 100 species of birds, of which more than half are psittacines, have been found to be infected with the psittacosis-lympho-

granuloma group of organisms; the infection of poultry has recently been recognized as a public health and economic problem.[2] Mammalian reservoirs of the disease have also been noted, but so far few human infections have been attributed to this means of spread. Broad-spectrum antibiotics are very effective in the treatment of the disease in man, while experimental feeding and injection of parakeets with tetracycline compounds have shown good results. The control of infection in turkeys, ducks and squabs with antibiotics has, however, proved uncertain. The Committee felt that importation of psittacine birds should continue to be restricted to that of rare species or essential breeding-stock until the value of control by medicated food has been definitely established.

Q fever

Over 50 countries report Q fever and, in most of these, domestic ruminants appear to be the major sources of transmission to man. Infected ewes are considered to be especially dangerous at the time of lambing. In the wild, the life cycle of the disease appears to involve birds, ticks, the bandicoot and rodents. The evaluation of the importance of avian hosts, in particular, in the international transmission of the disease requires further investigation.

Simple and dependable diagnostic tests, such as the micro-agglutination and the capillary tests, have lately been developed, although the standard procedure remains the complement-fixation test. Control of the disease is still ineffective, in spite of the promise afforded by cattle vaccination, but treatment of acute Q fever in man with broad-spectrum antibiotics has been very successful.

Arthropod-borne viral encephalitides

Evidence of infection with some member of this rapidly-growing group has been obtained in almost all countries investigated. The Committee found that the possibilities for control of tick-borne encephalitis are better than those for the mosquito-borne variety. The numbers of ticks can be reduced by careful management of pastures, or by dusting infested areas with DDT or BHC; and the disease can be avoided by encouraging workers exposed to risk to wear clothing impregnated with insecticides, by the use of formalinized vaccines, which give good protection, and by heat-destruction of the virus in milk. For the mosquito-borne encephalitides, the vaccines tested have not given very satisfactory results in man. In horses, however, formalinized embryo vaccines against Eastern and Western encephalomyelitis have been successfully developed.

Hydatidosis

Hydatidosis is usually caused by *Echinococcus granulosus*, which commonly infests the domestic dog; it may also be caused by a second species of *Echinococcus* (*E. multilocularis*), having as its definitive host the fox, from which it is transmitted to form the cystic stage in wild rodents.[3] The life of *E. granulosus*, after maturity, is limited to some six months, so that if re-infection can be avoided, dogs will become clear of the parasite in about eight months.

Control of the disease depends upon eradication of canine infections by anthelmintic treatment of dogs, elimination of strays, reduction of the wild canidae population, prophylactic measures against canine re-infection, and public education in its dangers. Arecoline hydrobromide so far remains the anthelmintic of choice, but there is an urgent need for the development of a more effective drug.

Diagnosis of human hydatidosis still presents difficulties. X-ray examination is of great value; certain allergy tests warrant further development and standardization; and recent research on serological examinations indicates that the complement-fixation test with an improved antigen and an indirect haemagglutination test deserve wider trial.

[2] See *Chronicle*, 1959, 13, 83.

[3] See *Chronicle*, 1959, 13, 194.

Possible relationship of human and animal influenza

The Committee noted the progress of an animal-serum survey undertaken by WHO in some 25 countries since the human influenza pandemic of 1957.[4] The purpose of this survey was to determine whether the A/Asian (A2) strain, or a closely related one, existed in the animal population before the outbreak, and if not, whether the strain would establish itself in domestic animals (horses and swine) susceptible to other strains of type-A virus. The continuation and expansion of analogous surveys were strongly advised.

Further problems

The Committee also briefly discussed recent developments in the study of toxoplasmosis, listeriosis, cutaneous larva migrans, dermatomycosis, trematode infections, tularaemia and cat scratch disease. Recommendations were made on the reporting of zoonoses, on methods of investigation of the ecology of wild-animal reservoirs, on the study and grouping of the " orphan " viruses (which have been described as " viruses in search of a disease "), and on the need for clarifying the natural history of specific disease agents, particularly with regard to the possible emergence of new zoonoses. Specific studies on this final, and highly important, problem are under consideration by WHO and FAO.

The persistent threat which zoonoses constitute to the public health and economy of many countries can thus best be combated by further extension of research along the lines indicated by the Committee; by the improvement of reporting services; by careful attention to food hygiene; by the free and frequent exchange of information both internationally and between the internal agencies concerned; and by the joint planning and financing of disease control campaigns, and mutual assistance in laboratory and epidemiological work. Co-ordinated action by doctors, veterinarians, public health officials and agricultural departments offers the chief means of successfully controlling these diseases.

[4] See *Chronicle*, 1959, 13, 168.

The effects of loneliness on hospital admissions

" One of the most striking and objective indications of the effects of relative deprivation of human companionship is given by the figures (for hospital admissions) for England and Wales cited in the report of the Guillebaud Committee.[1] Compared with the demands for admission made by single men and women and, to a larger extent, the widowed, the proportion of married men and women aged 65 years and over in all hospitals is relatively small. In fact, among the married the rise in the proportion of those hospitalized with advancing age is not very striking and does not reach high levels even after the age of 75. In England and Wales two-thirds of all general and mental hospital beds occupied by those over 65 years are taken up by the single, widowed and divorced. The single (i.e., never married), who constitute 12.6% of the population of 65 years and over, contributed 55.4% of admissions to mental hospitals. Providing more human contact for those without relatives or friends must therefore claim high priority in any prophylactic endeavour on behalf of the aged in the community."

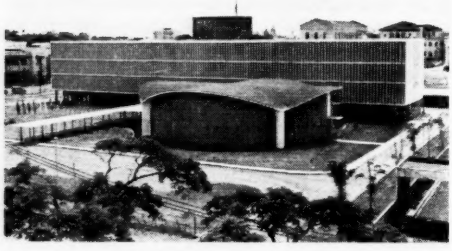
... From the sixth report of the WHO Expert Committee on Mental Health, *Wld Hlth Org. techn. Rep. Ser.*, 1959, 171

[1] Great Britain, Committee of Enquiry into the Cost of the National Health Service (1956) *Report...*, London

Notes and News

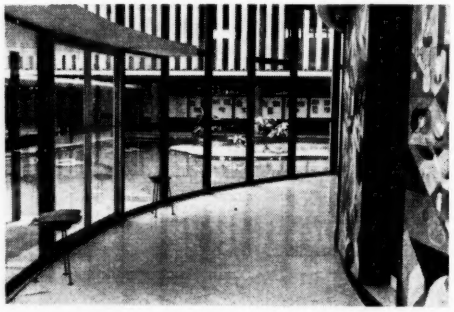
New WHO Building in Manila

A recurring difficulty of growing international organizations is that of accommodation. The Headquarters of WHO itself, which since 1948 has been housed in part of the Palais des Nations, Geneva, under an agreement with the Swiss Government and the European Office of the United Nations, now finds this accommodation inadequate and some of its services will shortly have to move to temporary premises in another part of Geneva. A proposal for an entirely new WHO Headquarters building in Geneva is being submitted to the Twelfth World Health Assembly this month.



General view of the new WHO building in Manila

The WHO Regional Office for the Western Pacific has found a happy solution to a similar problem, thanks to the generosity of the Philippine Government and Member States in the Region, which have contributed to the cost of constructing a new building for the Office in Manila. Designed in contemporary style by a Filipino architect, Mr Alfredo J. Luz, the four-storey building stands on a one-hectare site made available by the Philippine Government. It is fronted by a spacious lawn and a miniature pool, and has a separate Conference Hall equipped with a simultaneous interpretation system and other up-to-date facilities. A special feature of the construction is the use of sun-baffles to protect the offices from the tropical heat (see photographs). The building, which was occupied by the staff of the Regional Office on 20 February 1959, also provides space for the offices of the Resident Representatives of the United Nations Technical Assistance Board and of UNICEF, and the United Nations Information Office in the Philippines.



View from the Conference Hall

Another view of the building

Assignments of WHO visiting professors in 1958

The three principal objects of the assistance given by WHO to governments in the field of education and training are: first, to help countries to deal with shortages of health and medical personnel; secondly, to promote technical skill and knowledge by teaching and demonstration teams, by fellowships and all other available means; and, thirdly, to assist in the exchange of scientific information.

Against this background it is interesting to consider the scope and types of the subjects dealt with during 1958 by WHO visiting professors, and the wide range of countries to which they were assigned. In all, 33 senior teachers took up this task, 24 in medical and public health schools and 9 elsewhere. The total time occupied amounted to 291 months, and 17 countries were visited (see table below).

Assignments by country

	Professors	Total months
Afghanistan	2	22
Burma	2	16
Cambodia	3	24
Ethiopia	3	30
Fiji	2	24
India	4	26
Indonesia	3	32
Iraq	1	1
Israel	1	12
Libya	1	12
Nepal	2	24
Nigeria	1	12
Pakistan	2	24
Philippines	3	10
Singapore	1	8
Somalia	1	2
United Arab Republic (Egypt)	1	12
	33	291

Assignments by subject

	Professors	Total months
In medical and public health schools		
Anatomy	2	22
Biology	1	12
Mental health	2	7
Ophthalmology	1	6
Paediatrics	8	65
Parasitology	1	1
Pharmacology	1	12
Physiology	4	43
Public health and preventive medicine	3	22
Radiology	1	9
Other		
Auxiliary personnel	5	50
Environmental sanitation	3	30
Physiotherapy	1	12
	33	291

Water pollution in Japan

Like all industrial countries, Japan has a serious water-pollution problem. Sewage disposal is often inadequate, and the fouling of streams and rivers by factory waste is widespread. As a result, the health of the people is endangered, while rice-growing and fishing—both of vital importance in the country's economy—are threatened by the contamination of streams and paddy-fields.

New legislation to remedy the situation was recently passed by the Japanese Diet: it includes regulations for the control of water pollution, and provides for the establishment of a control agency directly responsible to the Prime Minister, and the appointment of a sanitary engineer as its chief administrative officer. In preparing this legislation, the Japanese Government followed the advice of a WHO public health engineering consultant, who visited Japan in August 1956 to study the problem and suggest practical measures for its solution.

Third Asian Malaria Conference

Opening the Third Asian Malaria Conference, which was held under WHO auspices at New Delhi, India, from 16 to 21 March 1959, Jawaharlal Nehru, Prime Minister of India, warned against the danger of slackening the pace of efforts to eradicate malaria. "There is a great danger in going slowly," he said, "lest the enemy should get accustomed to your weapons and then it will not be easy to master it." He went on to refer to the economic effects of malaria which he described as "in some ways the worst" of all diseases afflicting mankind. There might be other diseases more painful, more terrible and more fatal, but perhaps sudden death was preferable to the slow death and decay brought about by malaria, the enfeebling of whole populations and the sapping away of the vital energies of the people.

The Conference was attended by Ministers of Health and leading malariologists from the following twenty countries and territories in the South-East Asia and Western Pacific Regions: Afghanistan, Australia, Burma, Cambodia, Ceylon, Federation of Malaya Hong Kong, India, Indonesia, Japan, Laos, Nepal, Netherlands New Guinea, North Borneo, Philippines, Republic of Korea, Sarawak, Taiwan (China), Thailand, and Viet Nam. Views were exchanged on the administrative, financial, legislative and health education aspects of the eradication programmes planned or in progress in these countries and territories.

Regional Conference on Maternity Care

In the Western Pacific Region, as elsewhere, WHO is helping many governments to strengthen and develop their maternal and child care services, often in co-operation with UNICEF, which provides the equipment and supplies needed by the governments for this work.

A WHO-sponsored Conference on Maternity Care was held in Manila by the WHO Regional Office for the Western Pacific, from 9 to 20 March 1959. The 46 participants included workers in maternal and child health administration, clinical obstetrics, paediatrics, midwifery and nursing from 16 countries and territories in the Region. The Conference was also attended by representatives of UNICEF and the US International Co-operation Administration (ICA), and some WHO staff from field projects. The Conference staff included officials of the WHO Western Pacific Regional Office, as well as consultants from other regions and from Headquarters.

The aims of the Conference were to review current maternity care problems in the Region, and methods of dealing with them; to discuss the functions and training of professional and other health personnel engaged in maternity care; to promote better understanding and closer co-operation between workers in this field; to stimulate action for the improvement and more effective use of existing maternity care services and their integration into the general health services.

Medical rehabilitation

Schemes for the rehabilitation of the disabled have proved to be of considerable social and economic importance in a number of countries. In 1953, for example, a rehabilitation service was established with United Nations assistance in Guatemala; as a result, the average treatment period for injured workers was reduced from 203 days in 1952 to 37 days in 1955. In Australia, a few thousand persons formerly receiving invalidity pensions have been restored to productive employment by rehabilitation services. Not only does this represent a saving to the State on invalidity payments, but the rehabilitated persons now make a substantial contribution to the national income.

The WHO Regional Office for Europe is paying increasing attention to the problem of medical rehabilitation, and has been working for the improvement of rehabilitation services—particularly for physically disabled children—in co-operation with the governments of Austria, Greece, Italy, Spain, Turkey and Yugoslavia. A European Technical Conference on Medical Rehabilitation

met in the Regional Office in Copenhagen, from 6 to 11 April 1959, to study rehabilitation needs and services in Europe and to discuss how WHO in Europe might best continue its work in this field. Participants were invited from Austria, Denmark, France, Greece, Italy, Poland, the United Kingdom, and the USSR. The United Nations and ILO were also represented.

The following topics were discussed: European practices and policies in dealing with disablement; the magnitude of the problem and the need for further investigation; practical examples of rehabilitation services; rehabilitation and assessment of working capacity; rehabilitation in psychiatry; the role of different categories of medical personnel in rehabilitation; training of team leaders and workers in this field; organization of medical rehabilitation and related services, including co-ordination at the national and local levels; relations with welfare, vocational and educational services.

Leprosy control in Africa

It is estimated that, throughout the world, there are some ten million persons suffering from leprosy, about a quarter of them being in Africa south of the Sahara. During the past few years mass antileprosy campaigns have been under way in a number of African countries and territories.[1]

Some of the leprologists most directly concerned with the organization of these campaigns took part in an Inter-African Conference on Leprosy Control, held at Brazzaville, French Equatorial Africa, from 14 to 21 April 1959, under the auspices of WHO and the Commission for Technical Co-operation in Africa South of the Sahara (CCTA). The participants—some 30 in all—also included leprologists who had worked in other parts of the world.

The Conference reviewed reports on the leprosy situation in the various African countries and territories represented, and discussed the following topics: the organization of mass campaigns using mobile teams and fixed treatment centres; the role of leprosaria and leprosy villages; the integration of antileprosy work into the general public health services; segregation of leprosy patients with particular reference to the separation of children from their infectious parents; and the social, physical and psychological rehabilitation of patients.

[1] See *Chronicle*, 1959, 13, 81.

Meeting on yaws control

Yaws is endemic in the neighbouring countries of Burma, Cambodia, Laos, Malaya and Thailand, as well as in Indonesia and the Philippines, and in all these countries projects for the control of the disease are in operation or planned. Experience has shown that they have many yaws control problems in common, including the difficulty of continuing follow-up activities, such as consolidation and surveillance, and that of co-ordinating activities in the border areas of neighbouring countries, as well as in countries in the same geographical area, in order to end the transmission of new infection across the borders or the intervening seas.

An Inter-Country Yaws Control Co-ordination Meeting, at which the above-mentioned countries were represented, was convened by the WHO Regional Offices for South-East Asia and the Western Pacific, at Kuala Lumpur, Federation of Malaya, from 13 to 18 April 1959. The aims of the meeting were: to make available to the participants the considerable body of experience that has accrued from the yaws control projects in the participating countries and elsewhere; to compare the approaches and techniques used in the various control programmes; to discuss common problems and possible solutions; and to seek the most effective means of co-ordinating yaws control activities in neighbouring countries with a view to the systematic eradication of yaws from the whole geographical area.

Seminar on veterinary public health

The first seminar on veterinary public health to be held in the Western Pacific

Region took place at Tokyo, from 20 April to 1 May 1959, under the auspices of the WHO Regional Office for the Western Pacific and of FAO. It was attended by some 30 medical and veterinary officers from Australia, Federation of Malaya, Fiji, Guam, Hong Kong, Japan, Macao, New Zealand, the Philippines, Republic of Korea, Taiwan (China), and Viet Nam.

The aim of the seminar was to review veterinary public health programmes in the Region, and to see how they might be improved. The topics discussed included: the inter-relationships of human and animal health and disease; some zoonoses of major interest in the Western Pacific; the control of food products of animal origin which are of importance in the transmission of disease; veterinary public health organization and practice, including collaboration between medical, veterinary and sanitary services and the training of personnel.

Sterility of biological preparations

General requirements for the sterility of biological preparations were formulated by a Study Group which met in Geneva from 20 to 25 April 1959. The Group, which was one of a series convened by WHO to draft internationally recommendable requirements for biological substances, considered various aspects of sterility control, including sampling procedure, acceptance criteria, and tests to detect specific viral contaminants that may originate from human donors, animals, and tissues used as source materials in the preparation of biological products.

WHO has already formulated general requirements for manufacturing establishments and control laboratories dealing with biological substances, as well as specific requirements for poliomyelitis vaccine, yellow fever vaccine, cholera vaccine, and smallpox vaccine. These will be published shortly in the WHO Technical Report Series.

People and Places

Age-grouping of malaria vectors

A WHO-sponsored course on the application of advanced entomological techniques to malaria eradication was held from 12 to 15 April 1959 at the London School of Hygiene and Tropical Medicine. A large part of the course was devoted to the study of modern techniques for the age-grouping of malaria vectors, a branch of applied entomology which has been particularly well developed in the USSR. The lectures and practical demonstrations on this subject were given by one of the foremost entomologists of that country, Dr Tatiana Sergeevna Detinova.

Dr Detinova, who studied medicine at the State University in Moscow, has worked since 1935 at the Institute of Malaria, Medical Parasitology and Helminthology, USSR Ministry of Health, Moscow. She is the discoverer of the method of determining the physiological age of mosquitos from the appearance of the tracheoles, and has improved the method of assessing the physiological age of female *Anopheles* from the presence of thickenings in the follicular tubes of the ovaries.

Maternal and child health centres

Reviews of selected aspects of maternal and child health activities are presented to the Joint WHO/UNICEF Committee on Health Policy every two years. The report to be presented to the Committee at its session in October of this year will deal with child care and nutrition education activities in WHO/UNICEF-assisted maternal and child health centres. In connexion with this report, Dr Cecil Slome, of Durban, Union of South Africa, will spend two and a half months studying these activities in centres in Kenya, Tanganyika and Uganda.

Educated at the University of Cape Town, the Institute of Family and Community Health, Durban, and the London School of Hygiene and Tropical Medicine, Dr Slome worked for six years as Medical Officer in charge of the Polela Health Centre of the Union Health Department, Pretoria, where his duties included care of expectant mothers and children of school and pre-school age in a rural African area. Since 1956, he has been Senior Lecturer and Family Physician in the Institute of Family and Community Health attached to the University of Natal.

Insect control

As part of a WHO programme to co-ordinate research on insecticide resistance and vector control throughout the world, Dr A. W. A. Brown, Head of the Department of Zoology of the University of Western Ontario, London, Canada, has been asked to make new contacts with investigators working in this field in Eastern Europe and Australia. A leading authority on insecticide resistance, Dr Brown was formerly attached to the Division of Environmental Sanitation at WHO Headquarters.

The Government of the United Arab Republic (Province of Syria) is at present investigating the control of various insects, particularly non-anopheline mosquitos, lice, flies and fleas, in connexion with a WHO-assisted rural sanitation programme. Mr James B. Gahan, an entomologist from the United States Department of Agriculture Entomological Research Laboratory in Orlando, Fla., is spending three months in Syria organizing field studies on the ecology of these insects and advising on control programmes.

Malaria eradication

Plans for a training centre for French-speaking malaria workers in the Eastern Mediterranean Region are being examined in Tunisia by Dr E. J. Pampana, who, until his retirement last year, was Director of the Division of Malaria Eradication at WHO Headquarters. The centre, which is to function for at least three years, will train malariologists, entomologists, parasitologists, sanitary engineers and sanitarians, and may also serve the African and European regions. Dr Pampana will subsequently visit Iran, on behalf of WHO, to advise the health authorities on the development of the national malaria eradication programme.

Dr Fritz Ronnefeldt has been appointed medical officer to the WHO-assisted malaria eradication project in Cambodia; this is the development of a control project started in 1950 and is expected to be completed by 1962. Born in Antwerp, Belgium, Dr Ronnefeldt obtained his medical degree from the University of Munich and his diploma in tropical medicine from the University of Hamburg. He joined WHO in 1956, serving from 1956 to 1958 as senior medical officer to the antimalaria project in Semarang, Central Java. From 1958 until his present appointment, he served as Regional Malaria Adviser at the WHO Regional Office for South-East Asia.

Environmental sanitation

Mr Walter Tabosa, of Brazil, was recently appointed Regional Adviser in Environmental Sanitation at the WHO Regional Office for South-East Asia. A civil engineering graduate of the University of Brazil, Mr Tabosa undertook post-graduate studies at the University of Michigan, where he received the degree of Master of Public Health. Mr Tabosa has had extensive experience of environmental sanitation in his own country and in Panama, where, as sanitary engineer to a WHO-assisted public health programme, he helped the Government to carry out a nation-wide sanitary survey and to develop a five-year environmental sanitation programme.

The WHO-assisted environmental sanitation project in Ghana has as its aim the improvement of water supplies and of sewerage and drainage systems in various urban centres. Mr Moses Lilien, of Israel, was recently appointed to this project for a period of two years to advise the Ministry of Health on public health engineering problems and on the training of personnel. Mr Lilien studied engineering in Germany and France; he has served as District Sanitary Engineer at Tel-Aviv and subsequently as Director of the Division of Environmental Sanitation at the Israeli Ministry of Health.

Deratting and Deratting Exemption Certificates

Under the International Sanitary Regulations, each health administration must notify the World Health Organization of the ports in its territory approved for the issue of Deratting Exemption Certificates only, or of both Deratting and Deratting Exemption Certificates. A recent supplement to the WHO *Weekly Epidemiological Record* (No. 16, 1959, Supp. 1) contains a list of ports approved and designated for the issue of such certificates as on 17 April 1959. Any future amendments to the list, which covers 100 countries and territories, will be published in the *Weekly Epidemiological Record.*

CORRIGENDA

Vol. 13, No. 2

PEOPLE AND PLACES

pp. 101-102

The item headed **WHO Area Representative in Nigeria** gives an erroneous impression, since Dr A. D. Talec has been appointed WHO Area Representative not only for Nigeria, but for the whole WHO Western Area in Africa.

p. 102, left-hand column, l. 14

delete of Public Health and Population

insert for Overseas Territories

INTERNATIONAL NON-PROPRIETARY NAMES FOR PHARMACEUTICAL PREPARATIONS

p. 105, third name (Latin)

delete levoproxyphenum

insert levopropoxyphenum

p. 106, chemical formulae for "diethylthiambutenum", "dimethylthiambutenum" and "ethylmethylthiambutenum", in each case

delete (2-thienyl)

insert (2′-thienyl)

Vol. 13, No. 3

THE HEALTH OF SEAFARERS

p. 115, left-hand column, l. 10

delete 100 000

insert 10 000

Vital and health statistics

"Preventive medicine without records is like a ship without a compass. Vital statistics have contributed immensely to the advancement of knowledge because they have given direction to its progress. As our knowledge of the causes of things increases, the need for more extensive records increases also. Nevertheless, we must constantly evaluate our statistics to find out whether they are in fact leading us forward or merely providing routine figures for general administrative purposes."

World Health Organization (1959) *First report on the world health situation: 1954-1956* (*Off. Rec. Wld Hlth Org.*, **94**, 2), Geneva